SYSTEM SUPPORT DIRECTIVE

ASR9 **SSM-ASR9-016**

System Support Modification

ASR-9 SERIAL INTERFACE SYSTEM (ASIS) PHASE II DUAL BOARD

Highlights

- Added interface

07/14/2003

1. PURPOSE. This System Support Modification (SSM) authorizes a modification to the Surveillance and Communication Interface Processor (SCIP) in the Airport Surveillance Radar-9 (ASR-9) system. This modification adds hardware only.

2. DISTRIBUTION.

a. This SSM is distributed to selected offices and services within Washington headquarters, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, regional Airway Facilities divisions, and Airway Facilities field offices having the following facilities/equipment: ASR-9.

b. An electronic version and distribution report of this SSM are available on an Intranet site located at **http://aos-ext.amc.faa.gov/** under the "Technical Documentation" heading.

c. To obtain additional hard copies of this publication, contact Printing & Distribution Team, AMI-700B, at (405) 954-3771.

3. WITHDRAWALS. None.

4. REFERENCES.

a. TI 6310.31, ASR-9 System Remote SCI (Unit 22), Dual Remote SCIP (Unit 24).

b. Configuration Control Decision (CCD) No. N24476, provide SCIP'S configured with Dual ASIS II Board Configuration and Smart Mode for all STARS sites. This SSM deploys the Dual configuration only. Smart Mode will be deployed via a follow-on SSM.

c. ATS Maintenance Alert, "ASR-9 SCIP Configuration Alert", 12/06/2001.

5. BACKGROUND. The ASR-9 was originally designed to distribute surveillance and weather data over four modem channels, with a spare (five total modems), to two remote locations. Provisions for monitoring or connecting other equipment to the channels could be accomplished for test purposes at the modem patch panels or by adding modem data splitters. The use of data splitters and the modem patch panel caused problems by corruption of the primary data paths. This modification will provide a second isolated data connection for users of ASR-9 data such as,

Common Automated Radar Terminal System (ARTS), Standard Terminal Automation Replacement System (STARS), and Integrated Terminal Weather System (ITWS).

6. APPLICATION. This modification applies to all ASR-9 sites with Remote SCIP (Unit 22), FA-10087 or Dual Remote SCIP (Unit 24, FA-10091).

7. MATERIALS REQUIRED. The following material is required to modify each unit and is available in kit form on NSN number 0000-00-012-1692.

	Description	NSN	Quantity
a.	Circuit card	ASR9-002.6	1 each
b.	Adapter Box, A12	ASR9-002.2	1 each
c.	Screw, 8-32 x 1 5/8-inch	Stainless	6 each
d.	Lock-washer, 8-32	Stainless	6 each
e.	Flat-washer, 8-32	Stainless	6 each
f.	Cable mount	Panduit#FCM3.25-A-L14	3 each

8. SOURCE OF MATERIALS. Requisition material through the FAA Logistics and Inventory System. KITS SHALL BE ORDERED AND USED ONLY FOR MODIFYING THE EQUIPMENT STATED IN PARAGRAPH 6 OF THIS CHAPTER. Do not order extra kits .

9. SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED.

a. Maintenance Display Terminal (MDT) or equivalent Personal Computer (PC)

b. Null Modem Cable

c. Multimeter

d. DB9 Extension Cable

10. PROCEDURE TO BE PERFORMED BY. Field maintenance personnel or as determined by the regional Airway Facilities Division Manger.

11. WHEN MODIFICATION IS TO BE PERFORMED. As soon as practical after receipt of this modification.

12. ESTIMATED TIME REQUIRED. One person, two hours per facility. Estimated time does not include modification preparation or updating of the instruction books.

13. DISPOSITION OF SURPLUS PARTS. Return all surplus parts including any ASIS-Phase 1 circuit cards to the National Airway Systems (NAS) Engineering Division, AOS-200. Use the shipping materials and ship to the following address: William J. Hughes Technical Center AOS-270, Building 270, Atlantic City International Airport, Atlantic City, NJ 08405.

14. PROCEDURE. The Remote SCIP or Dual Remote SCIP, depending on the site configuration, will be out-of-service during the installation and testing of this modification.

a. SCIP Evaluation Prior to Modification.

(1) Verify that SSM-ASR9-013 and the ATS Maintenance Alert titled “ASR-9 SCIP Configuration Alert” (12/06/2001) have been completed. Refer to Appendix 7 for the ATS Maintenance Alert.

(2) Using the Facility Reference Data File (FRDF) review, validate, and record any changes to the SCIP A and SCIP B variable parameters.

(3) Connect the WYSE 50/MDT terminal to the SCIP cabinet (null modem cable required).

(4) Change the SCIP A and SCIP B Fault Isolation Test (FIT) power up parameter to the **long** SCIP power up cycle (Variable Site Parameter (VSP) 28), and save the new value. This is done to allow the SCIP to go through a full FIT after the modification is completed.

(5) Reset each SCIP and validate that no summary alarms are present in the system.

(6) Verify that the remote system control panel is operating.

(a) RSCIP – Take control at the remote system control panel. Depress the following switches and observe the changes:

1. Auto/Manual Post Processor
2. CP/LP

(b) DRSCIP – Cannot be performed at these types of facilities (No System Control).

(7) Verify that the modems and modem links are alarm free.

(a) RSCIP - Call up the Automatic Network Supervisor (ANS) menu (0.2.11). Observe that there are no errors recorded in ANS1 and ANS2.

(b) DRSCIP – This can be accomplished by observing the modems and making sure they are not in test (test indicates modem failure).

(8) Verify that the ASIS II card in A3A06 (SCIP A) is operating correctly using the procedure in paragraph 15.

b. Validation of SCIP A and B + 5 (V) power supplies.

(1) The Light Emitting Diode (LED) solder pad located at the top edge of the Printed Circuit Boards (PCB) A3A9, A3A40, and A4A9 will be used as the measuring point. Chassis frame can be used as the ground return. A3A9 is SCIP A supply, A4A9 is SCIP B supply, A3A40 is the “OR” circuit output for the + 5 Volt system control.

(2) Measure and record: A3A9_____,A4A9_____,(A3A40_____,)*

(3) Power OFF SCIP A at CB1A.

(4) Measure and record: A4A9_____,(A3A40_____,)*

(5) Repower SCIP A and power OFF SCIP B at CB1B.

(6) Measure and record: A3A9_____,(A3A40_____,)*

(7) Repower SCIP B at CB1B.

(8) Measure and record: A3A9_____,A4A9_____,(A3A40_____,)*

(9) At no time shall any supply reading be equal to or less than 4.8 V.

(10) If required, adjust supplies using procedures in TI 6310.31.

(11) Validate that no alarms are present in the system.

(12) Review FRDF, inspect SCIP parameters, and validate that no SCIP variable parameters have changed value. If a parameter has changed, a non-volatile Random Access Memory (RAM) may be defective.

(13) Verify that the system control panel is operating. (Remote SCIP only.)

(14) Verify modems and links are alarm free.

NOTE: ***** REMOTE SCIP ONLY

c. SCIP cabinet modification.

(1) At Remote SCIP (Unit 22)/Dual Remote SCIP (Unit 24), as applicable, set cabinet circuit breakers CB1A and CB1B to OFF.

(2) Remove SCIP cabinet rear panel.

(3) Install adapter box A12 (Item b) to adapter box bracket using (6) 8-32 screws and lock-washers (item c, d and e).

(4) Refer to the figures in appendix 2 and 3. Connect cable A12P9 to SCIP B backplane slot A4 XA6. Pin 1 (brown wire) of cable to Pin C01 of backplane.

(5) Connect cable A12P8 to SCIP B backplane slot A4 XA6. Pin 1 of cable to Pin C51 of backplane.

(6) Connect cable A12P7 to SCIP B backplane slot A4 XA6. Pin 1 of cable to Pin C75 of backplane.

(7) Install cable mount (item f) and dress cables in cabinet as shown in Figure 1.

d. Refer to TI 6310.31 SUP1 section 3.2. (Table 3-1 and figure 3-1 in appendix 4.) Verify the ASIS II circuit card (item a) is configured as follows:

SW2 positions 1-6 closed (levers pushed down toward circuit card) bypass the onboard processor.

SW3 positions 1-6 closed. (Data polarity normal)

JP3 installed. (Enable watchdog timer)

JP7 - jumper 2-3. (Ethernet Port Clock is available)

JP8 - jumper 1-2. (Ethernet Port is available)

This configuration is the ASIS I mode, which disables the processor functions for all outputs on the adapter box, A12.

e. Install ASIS Phase II circuit card in Remote SCIP/ Dual Remote SCIP slot A4A06.

f. At Remote SCIP (Unit 22)/ Dual Remote SCIP (Unit 24), as applicable, set CABINET circuit breakers CB1A and CB1B to ON at the POWER CONTROL circuit breaker panel.

g. Verify that SCIP A and SCIP b + 5 power supply voltages are correct using Step B, 1-10.

h. Verify there are no alarms on each SCIP (observe that there are no red LED illuminated).

i. Using the FRDF, review, validate and record any changes to the SCIP A and SCIP B variable parameters.

j. Return both SCIP A and B to the “short” FIT cycle (VSP28).

15. TEST AFTER MODIFICATION. Refer to Appendix 5, TI 6310.31 SUP 1, Section 3.0, Operation, for the following steps.

a. Depress SW1 on each ASIS circuit card. This will RESET the boards.

b. Observe DS1 on both ASIS circuit cards. DS1 is a RED LED indicator lamp on the outer edge of the board. If the light stays ON, there is a fault on the ASIS card or wiring. If DS1 is OFF, the tests have passed. DS2, the GREEN indicator lamp, should be flashing ON and OFF at a rate of 16 times per antenna rotation (the lamp toggles states with each Sector Mark Message received).

c. Using the procedure in TI 6310.31 SUP section 3.6, verify that each ASIS II card can be connected to the ASR-9 dumb terminal (WYSE 50) at the Remote SCIP.

d. Enter an “8” on the ASIS main menu to clear all Performance Counters. Access menu #12 on the ASIS Phase II. Wait about 2 minutes and refresh the screen (press ‘Enter’). Repeat this step for both ASIS II cards.

The following screen should be displayed:

	CH1	CH2	CH3	CH4
MSG	1678	1680	258	1682
IDLE	72982	72956	68096	73096
NO DATA	0	0	0	0
SYNC	0	0	0	0
PARITY	0	0	0	0
BUSY	0	0	0	0
4 FIELD	1060	1027	0	1033
7 FIELD	627	659	0	654
10 FIELD	0	0	2	0
32 FIELD	0	0	256	0
? LENGTH	0	0	0	0
DCD LOSS	0	0	0	0

---- General Performance ----		---- Spare Channels ----	
Sector Error	0	DCD LOSS 5	0
WX Error	0	DCD LOSS 6	240

Definitions:

MSG = number of messages received

IDLE= number of IDLE characters received

NO DATA = number of times a complete loss of data activity was detected

SYNC = number of times the ASIS II lost synchronization due to errors

PARITY = a parity error was detected

BUSY= the ASIS input buffers overflowed

X FIELD = number of messages received with X length in fields

DCD LOSS = Receiver Ready signal from ASR-9 modem was inactive

Sector Error = Out of sequence Sector Mark messages

WX Error = Out of sequence Weather Messages

The NO DATA, SYNC, PARITY, BUSY, Sector Error, and WX Error columns should all be 0 counts. If these counters are accumulating in the columns, a wiring error from SSM-ASR9-001 may be present. The other columns should increment according to the rate of the input data from the ASR-9.

16. RESULT OF MODIFICATION. This modification will permit the ASR-9 Remote SCIP and Dual Remote SCIP to be interfaced with other equipment requiring ASR-9 data. The ASIS Phase II Dual board provides an additional six buffered outputs, three RS-422 and three RS-232. Each output port supports five channels. The three RS-422 ports are dedicated for Common Arts and STARS and one RS-232 is dedicated to ITWS.

17. CHANGES TO INSTRUCTION BOOKS.

PAGE CONTROL CHART

Remove Pages	Dated	Insert Pages	Dated
		SSD TOC	
All Pages	All Dates	All Pages	07/14/2003
		TI 6310.31	
8-1 and 8-2	24 January 2000	8-1	07/14/2003
		8-2	24 January 2000
8-7 through 8-10	24 January 2000	8-7	07/14/2003
		8-8 and 8-9	24 January 2000
		8-10	07/14/2003
8-37 and 8-38	24 January 2000	8-37	07/14/2003
		8-38	24 January 2000
11-47/11-48	24 January 2000	11-47/11-48	07/14/2003
11-97/11-98	24 January 2000	11-97/11-98	07/14/2003
11-103/11-104	24 January 2000	11-103/11-104	07/14/2003
11-105/11-106	24 January 2000	11-105/11-106	07/14/2003
11-109/11-110	24 January 2000	11-109/11-110	07/14/2003
11-117/11-118	24 January 2000	11-117/11-118	07/14/2003
11-119/11-120	24 January 2000	11-119/11-120	07/14/2003
11-121/11-122	24 January 2000	11-121/11-122	07/14/2003
		TI 6310.31 SUP	
11-1 through 11-6	December 13 2000	11-1	December 13 2000
		11-2	07/14/2003
		11-3	April 2001
		11-4 through 11-6	07/14/2003
		TI 6310.37	
11-43/11-44	24 January 2000	11-43/11-44	07/14/2003

18. CHANGES TO INSTALLATION DRAWINGS. None.

19. CHANGES TO RECORDED DATA. Enter this EEM or SSD number, date, chapter and change number on the appropriate FAA Form 6032-1, Airway Facilities Modification Record.

20. ADDRESS CHANGES. Submit facility address, copy count, and additions or deletions to Carrie Batty via email to Carrie.ctr.Batty@faa.gov.

21. CLARIFICATION OR COMMENTS. This chapter will be included in the next revision to the table of contents for AF P 6310.1.

22. RISKS. If changes are not incorporated, unauthorized configuration may degrade the efficiency of the National Airway Systems (NAS) and the ability to maintain operations.

23. FALLBACK PROCEDURES. If changes are not incorporated or unattainable by the installer, contact AOS-200 for field support assistance to clarify procedures and options.

24. STATUS ACCOUNTING. Providing your equipment is listed in the Facility/Service Equipment Profile (FSEP), the Maintenance Organization has opened a Log Equipment Modification (LEM) record in the Maintenance Management System (MMS). Upon completion of this modification, you are required to close the LEM record and change the Maintenance Action Code (MAC) to a “G” if the modification was completed or a “W” if the modification is not applicable. In the event that your equipment is not listed in the FSEP, it is your responsibility to open the LEM record upon receipt/completion of this Modification. Verify that an “N” is in the “REP COD” field to ensure that the log entry will be upwardly reportable to the national database for National MOD Tracking. The data is to be entered into the LEM as follows:

FAC/SERV:	ASR-9
LOC/IDENT:	Refer to Distribution List
SHORT NAME:	SYS
Order No:	SSM-ASR9
Chapter:	16
Change:	HW

25. RECOMMENDATIONS FOR CHANGES. Forward any recommendations for changes to this directive through normal channels to the National Airway Systems Engineering Division, AOS-200, Operational Support.

Richard A. Thoma
Program Director for Operational Support

LIST OF APPENDIXES AND ATTACHMENTS

ITEM	DESCRIPTION	QUANTITY
APPENDIX 1	TEST AND EVALUATION GOLD STANDARD CONSIDERATIONS	1
APPENDIX 2	SCIP CABINET, RIGHT REAR VIEW, DOOR REMOVED	1
APPENDIX 3	BACKPLANE CONNECTIONS	1
APPENDIX 4	ASIS PHASE II DESCRIPTION OF CONTROLS AND INDICATORS	1
APPENDIX 5	TERMINAL OPERATION, COMMANDS, AND CHANGING OPERATING PARAMETERS	1
APPENDIX 6	ASIS II POWER CABLE ASSEMBLY	1
APPENDIX 7	ATS MAINTENANCE ALERT	1
ATTACHMENT 1	SSD TABLE OF CONTENTS	1
ATTACHMENT 2	INSTRUCTION BOOK CHANGES	1

APPENDIX 1. TEST AND EVALUATION GOLD STANDARD CONSIDERATIONS

1. **Purpose -** This appendix communicates the type of Gold Standard testing that was accomplished on this directive, SSM-ASR9-016. The scope of the testing conducted on this modification and test results are provided. Any additional unique testing or evaluation beyond the normal modification tests, that needs to be conducted during the field installation, is included in the Test Limitation paragraph.

2. **Scope -** This modification has completed development and systems testing. The system test was conducted at the facility with the system modification baseline at software and hardware modifications through AF P 6310.1.

3. **Results -** The system test was conducted at the FAA Technical Center ASR9 facility during periods of both peak and normal target load over a period of 1 day with customer representatives validating the user interfaces. All system specialist user screens on the MDTs including the RMM functions were exercised and validated. The system test was successful and completed on 5/14/2003.

Key site testing of this modification was conducted at the Ft. Hood, TX facility. No other sites were selected to evaluate the modification.

4. **Test Limitations -** This modification was tested and validated in all known configurations and no additional unique testing is required.

APPENDIX 2. SCIP CABINET, RIGHT REAR VIEW, DOOR REMOVED

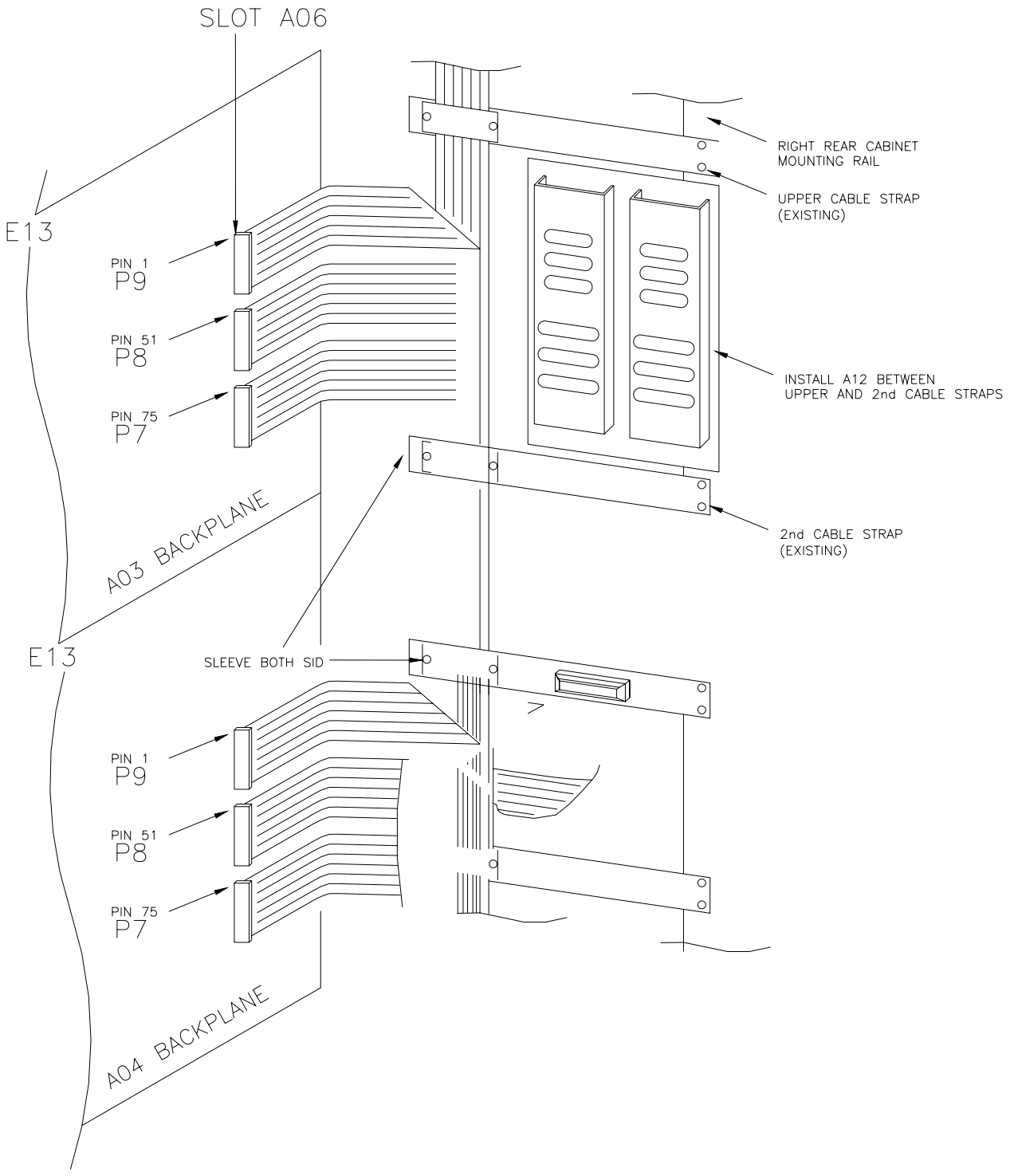


FIGURE 1. SCIP CABINET, RIGHT REAR VIEW, DOOR REMOVED

APPENDIX 3. BACKPLANE CONNECTIONS

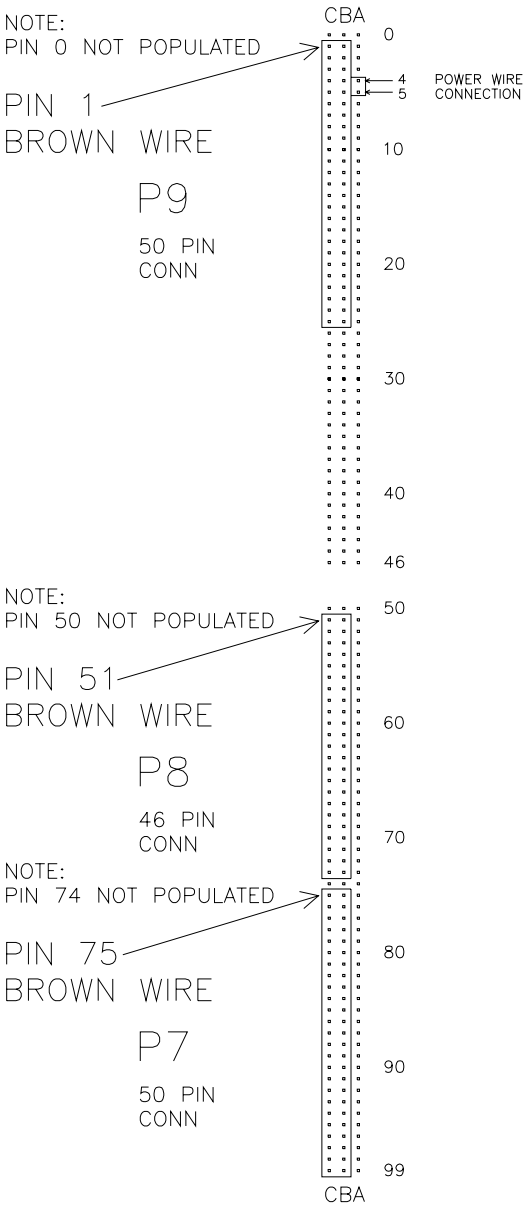


FIGURE 1. BACKPLANE CONNECTIONS

APPENDIX 4. ASIS PHASE II DESCRIPTION OF CONTROLS AND INDICATORS

Note: The following table and figure are an excerpt from TI 6310.31 SUP, Section 3.2 Equipment Controls and Indicators – Board Only.

TABLE 3-1. ASIS PHASE II, DESCRIPTION OF CONTROLS AND INDICATORS

Fig. 3-1 Location	Ref Des	Name	Function
1	SW2	Switch, SW2	
		Pos 01-06 Open (UP)	Enables onboard processor functions for the respective adapter box jack. For example, switch position 1 is used to enable the processor for J1.
		Pos 01-06 Closed	Bypasses onboard processor functions for the respective adapter box jack. For example, switch position 1 is used to enable the processor for J1. The output jack provides buffered replications of each modem input.
2	J3	Jack, J3	Maintenance Terminal port used for control and monitoring of the ASIS card.
3	J2	Jack, J2	Not assigned.
4	J1	Jack, J1	
		Jumper – Pins 1-2	With jumper installed, bootlander is enabled upon a system RESET.
5	SW1	Manual reset pushbutton switch	Pressing pushbutton resets ASIS II.
6	DS2	Status LED (green)	LED flashes while data is received by card. If lamp is steady green or OFF, a fault has occurred in the radar data input or the processor itself.
7	DS1	Status LED (red)	LED indicates a fault condition while software is running. LED is lit during RESET mode or during FLASH memory programming.
8	J21	Jack, J21	JTAG port, not used.
9	J4	Jack, J4	Background Debugger connection.

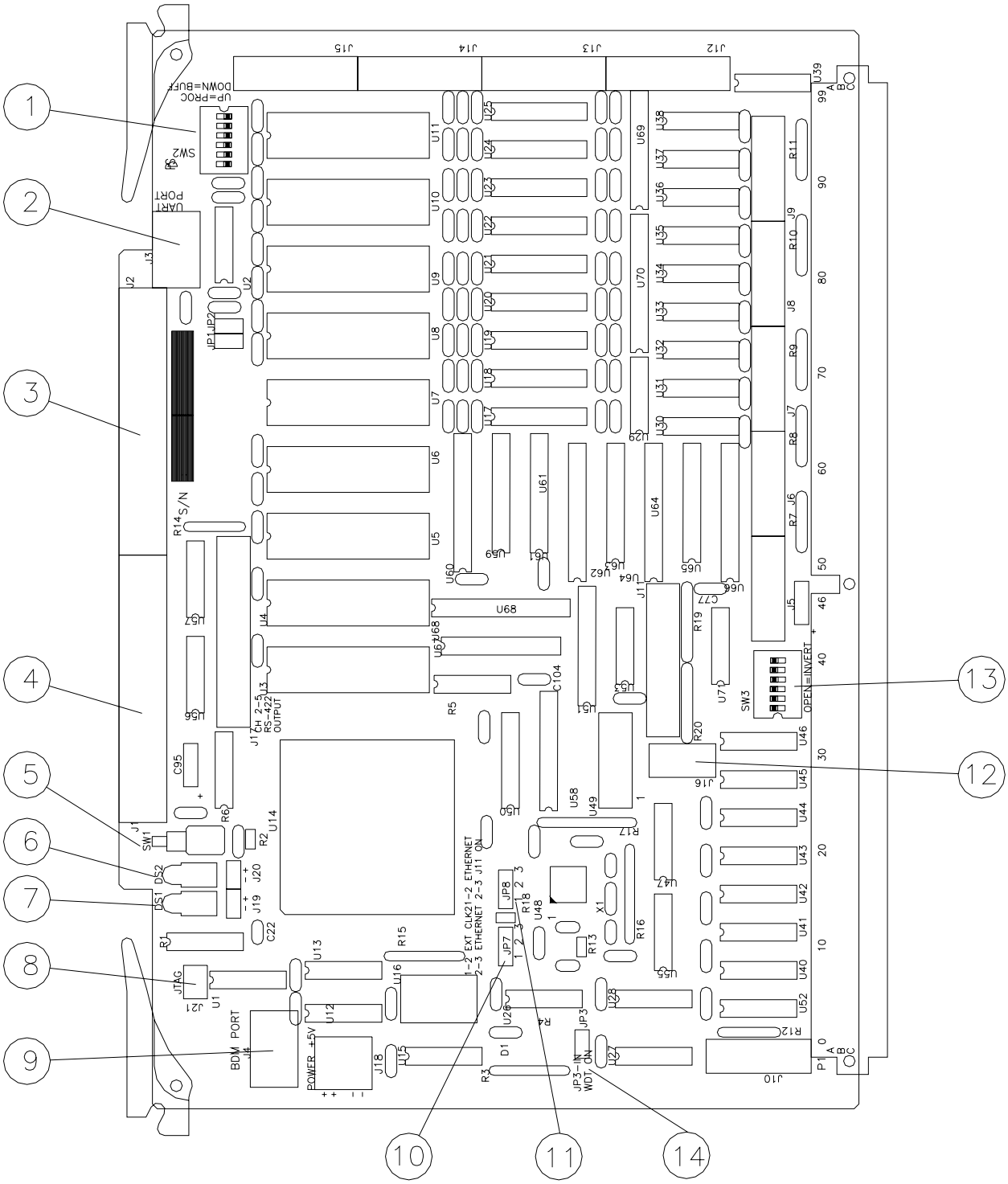


FIGURE 3-1. ASIS-PHASE II CONTROLS AND INDICATORS

APPENDIX 5. TERMINAL OPERATION, COMMANDS, AND CHANGING OPERATING PARAMETERS

NOTE: The following table and figure are an excerpt from TI 6310.31 SUP, Section 3.6 Terminal Operation.

3.6 TERMINAL OPERATION

The ASIS-Phase II card is controlled and monitored with any standard dumb terminal or PC that supports the following parameters:

Interface: RS-232 (PC style 9-Pin)

Baud Rate: 9600

Data Bits: 8

Stop Bits: 1

Parity: None

Terminal Type: American National Standards Institute (ANSI), VT-102, WYSE-50

File Transfer: XMODEM

1. REMOTE SCIP ASIS-Phase II ONLY – At Remote SCIP (Unit 22/24) connect RS-232 adapter cable (ASR9_002.8, see figure 3-3) to the ASIS-Phase II card (A03A06 or A04A06) J3. Connect RS-232 cable (9-pin straight through cable-male to female) from the ASIS-Phase II RS-232 adapter to the terminal. A 25-pin to 9-pin adapter is required when using the ASR-9 terminals and cabling.

   STANDALONE ASIS-Phase II ONLY – Connect RS-232 cable (9-pin straight through cable-male to female) from the ASIS-Phase II SERIAL COM connector (front panel) to the terminal. A 25-pin to 9-pin adapter is required when using the ASR-9 terminals and cabling.

2. **Depress the Ctrl and Z keys simultaneously** to log on to the ASIS-Phase II card. The ASIS-Phase II main menu should display. The software version and version date will appear on the first line.

3. Table 3-3 summarizes the commands used to operate the terminal.

Table 3-3. ASIS II TERMINAL COMMANDS

Keystroke	Description	Notes
Backspace followed by <ENTER>	Go back one menu	
Control-Z	Log On	Press simultaneously
<Enter>	Update Screen	Used on Performance Screens

4. Menu items are accessed by entering the item number. For example, item number two is accessed by the following keystrokes: **2 <Enter>**

3.7 CHANGING OPERATING PARAMETERS

The ASIS-Phase II card operating parameters are modified through the terminal connection. These parameters are stored in nonvolatile FLASH EPROM.

a. Log-on to the ASIS-Phase II terminal as instructed in section 3.6.

b. Navigate to the screen containing the parameter(s) you want to change.

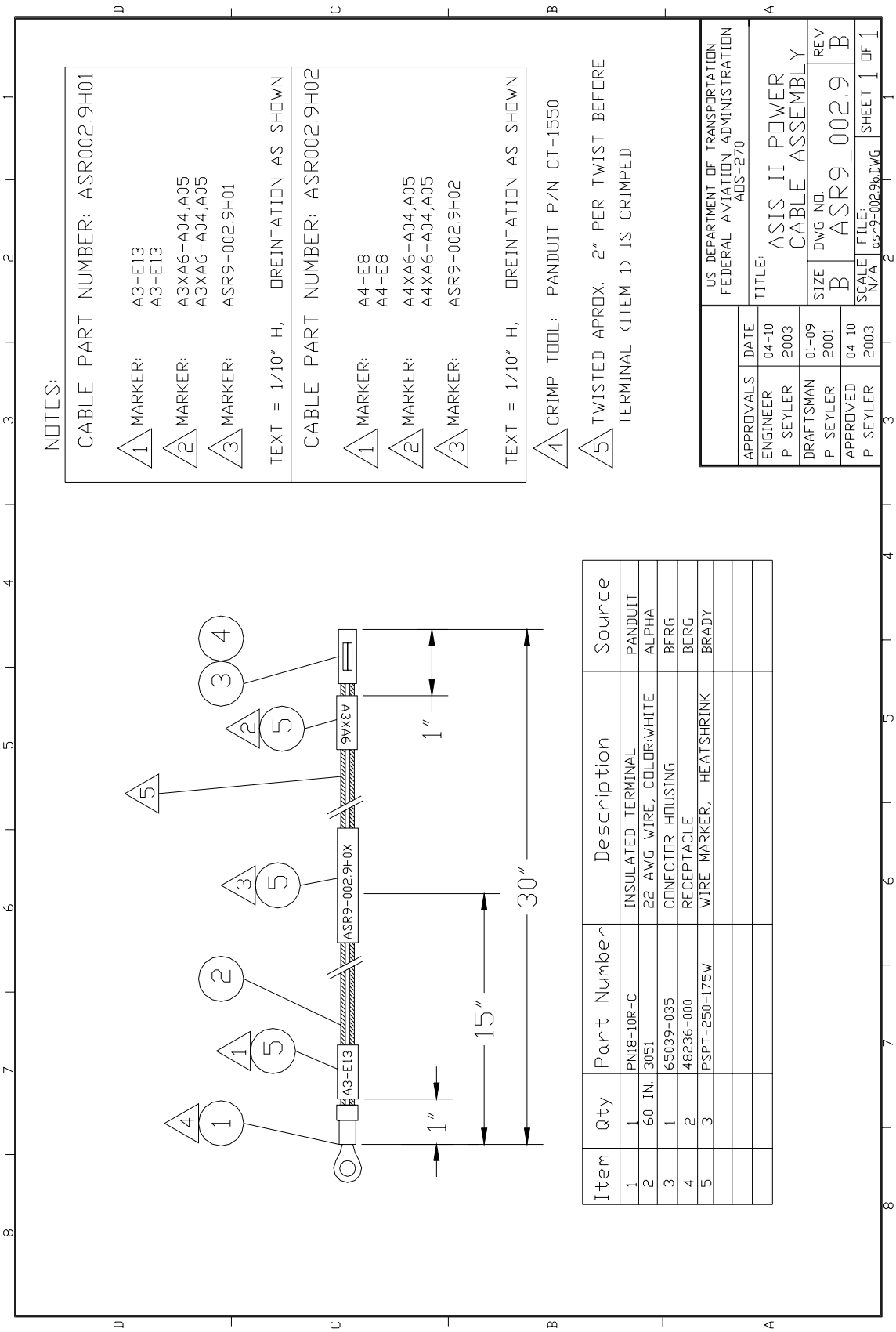
c. Enter the parameter number to be changed. For example, parameter number three on a screen is accessed by entering the following: **3 <Enter>**

d. Enter new value for the parameter(s). An asterisk will appear next to the changed value.

e. The changed values can now be loaded. Access the FLASH load screen by entering the following key sequence: **Backspace <Enter>**

f. The parameters can now be loaded into the FLASH EPROM by entering a **1**. Values are purged (not loaded) if a **2** is entered.

APPENDIX 6. ASIS II POWER CABLE ASSEMBLY



Item	Qty	Part Number	Description	Source
1	1	PN18-10R-C	INSULATED TERMINAL	PANDUIT
2	60 IN.	3051	22 AWG WIRE, COLOR:WHITE	ALPHA
3	1	65039-035	CONECTOR HOUSING	BERG
4	2	48236-000	RECEPTACLE	BERG
5	3	PSPT-250-175W	WIRE MARKER, HEATSHRINK	BRADY

ATS Maintenance Alert

National Operations Division (AOP-100)

12/06/2001 Email this Alert

ASR-9 SCIP Configuration Alert

Facility:

ASR

Summary:

All personnel responsible for the maintenance of the Airport Surveillance Radar (ASR-9) Surveillance and Communications Interface Processor SCIP should verify their system configuration and make corrections to SSM-ASR9-013 ASR-9 SERIAL INTERFACE SYSTEM (ASIS)-PHASE II modification.

Alert:

The ASR-9 Remote and Dual Remote Surveillance and Communications Interface Processor (SCIP -unit 22 and unit 24) provides the interface between the ASR-9 Sensor and the automated radar terminal systems. SSM-ASR9-013 ASR-9 SERIAL INTERFACE SYSTEM (ASIS)-PHASE II modification provided for the distribution of ASR-9 digital data and provides buffer isolation of the critical data paths.

SSM-ASR9-013 ASR-9 SERIAL INTERFACE SYSTEM (ASIS)-PHASE II changed the national baseline of the RSCIP's by providing a board that was to be inserted in the A3A6 location. The spare board that was provided in the kit was not to be inserted into A4A6 slot. The spare board should be placed with other spare ASR-9 printed circuit boards to be used for repairs when needed.

SSM-ASR9-013 ASR-9 SERIAL INTERFACE SYSTEM (ASIS)-PHASE II was distributed with an error on page 5, paragraph c. and an improperly identified backplane power wire cable. The power cable provided for the RSCIP A4 bucket should not go to the E13 terminal. The terminal end of that cable should go to the E8 terminal. Re-label the terminal end of the A4 bucket cable to correctly identify the new terminal connection as E8. A change page will be provided in the near future to correct the SSM. Failure to make this change will cause a 5 volt source that is not "ORed" to system control power to be used in the A4 bucket. The cable provided for the A3 bucket is correct and should remain connected to the E13 terminal.

Facilities are directed to investigate and insure that the ASR-9 RSCIP is within the correct National Baseline. Slot A4A6 should not be populated. Corrections should be made to move the A4 wiring as identified above to the E8 terminal.

If you have any questions please contact AOS-270 at (609) 485-HELP during normal duty hours.

OPI: AOS

AOP-100: J. Walker

ATT:

Serial #: 101680

ATTACHMENT 1. SSD TABLE OF CONTENTS

SYSTEM SUPPORT DIRECTIVE (SSD)

TABLE OF CONTENTS

SYSTEM SUPPORT MODIFICATIONS (SSM)

SYSTEM TECHNICAL RELEASES (STR)

Document Number	Date Issued	Title
STR-ASR9-001	02/06/98	DELIVERY OF AIRPORT SURVEILLANCE RADAR-9 PROCOMM SOFTWARE UPDATE
STR-ASR9-002	12/29/98	DELIVERY OF AIRPORT SURVEILLANCE RADAR-9 PROCOMM SOFTWARE UPDATE VERSION 5.0
STR-ASR9-003	11/29/99	DELIVERY OF AIRPORT SURVEILLANCE RADAR-9 SOFTWARE UPDATE VERSION 6.0
STR-ASR-9-004	12/15/99	ASR-9 VARIABLE SITE PARAMETERS AND PROGRAMMABLE ALARM THRESHOLD/FILTER BASELINE
STR-ASR9-004A	06/20/01	ASR-9 VARIABLE SITE PARAMETERS AND PROGRAMMABLE ALARM THRESHOLD BASELINE UPDATES

SYSTEM DOCUMENTATION RELEASES (SDR)

Document Number	Date Issued	Title
SDR-ASR9-001	CANCELLED	BY SDR-ASR9-002
SDR-ASR9-002	CANCELLED	BY SDR-ASR9-003
SDR-ASR9-003	05/09/02	ASR-9 TECHNICAL INSTRUCTION BOOKS UPDATE AND REISSUE OF ASR-9 TI CD ROM

ATTACHMENT 2. INSTRUCTION BOOK CHANGES

8.0 PARTS LIST

8.1 INTRODUCTION

This section contains a list of electrical parts and selected mechanical parts that are subject to replacement at the field level of maintenance. Only mechanical parts for rotating electrical equipment, and mechanical parts that are subject to wear, ageing, or damage by disassembly are listed. Note that the parts listed in this section cover three versions of the equipment: two configurations of the Remote SCIP (Unit 22), and one configuration of the Dual Remote SCIP (Unit 24). The two configurations of the Remote SCIP (Unit 22) are a high density configuration, used at sites where the High Capacity Modification Kit described in TI 6310.33 are installed, and a low density, or normal, configuration used as part of the standard ASR-9 System. The Dual Remote SCIP (Unit 24) configuration is supplied as part of the Dual Remoting Modification Kit described in TI 6310.34.

8.2 FIELD REPLACEABLE ASSEMBLIES

Assemblies of the equipment that are not designated for repair at the radar site fall into two categories: CRF/depot repairable assemblies, and throwaway assemblies.

8.2.1 CRF/Depot Repairable Assemblies

Assemblies in this category are not broken down in the parts list in this section. However, parts lists for these assemblies are contained in TI 6310.39, Section 8. The assemblies in this category are the following:

	Ref. Des.	Name	
	A1	SCIP Control Panel	
	A2	System Control Panel	
	A9	OR Circuit	
	A3A3, A4A3	General Interface	
	A3A5, A3A23, A3A40, A4A5, A4A23	SBC Processor	
*	A3A6, A4A6	ASIS Board	*
	A3A8, A3A9, A3A17, A3A48, A4A8, A4A9, A4A17	Programmable Interface	
	A3A12, A3A14, A4A12, A4A14	SCIP/SRAP Interface	
	A3A18, A3A42, A4A18	SBC Data Memory	
	A3A24, A4A24	Video Output	
	A3A26, A4A26	Weather Output	
	A3A28-A35	Distribution Control	
	A3A38	System Control Interface No. 1	
	A3A44	Panel Interface	
	P/O PS1-2	+5-Volt Module E Power Supply	
	P/O PS1-2	+25-Volt Module F Power Supply	
	P/O PS1-2	+15/-55-Volt Module G Power Supply	
	P/O PS1-2	-5/-5-Volt Module H Power Supply	

8.2.2 Throwaway Assemblies

Throwaway assemblies are not broken down in the parts list in this section. The only assemblies in this category are the following:

Ref. Des.	Name
A3A46	RS449 Interface Generator
A5-A8	Display Video Connector

8.3 PARTS LIST

The field–replaceable parts of the equipment are listed in a special format, which is described in the following paragraphs.

8.3.1 Parts Reference

The reference designation of a part, per ANSI Y32.16, is listed in column one of the parts list. To permit orderly development of the list, using electronic data processing equipment, certain listing conventions are necessary. The conventions used are explained in the following paragraphs below.

8.3.1.1 Parts Markings. Reference designations are generally in accordance with the actual equipment markings, with some exceptions. When an electrical assembly has not been assigned a reference designation on the applicable manufacturing drawing, a letter N reference designation is assigned for parts listing purposes. Letter N reference designations are also assigned to electro–mechanical assemblies that have not been assigned manufacturing drawing reference designations. Electrical piece parts that have not been assigned reference designations on manufacturing drawings are assigned ZZ reference designations in the parts list; and MP reference designations are used for electro–mechanical piece parts not having manufacturing drawing reference designations. Finally, electrical cable assemblies that do not have reference designations on the applicable manufacturing drawings are assigned the letter W reference designations.

8.3.1.2 Marking Frequency. To minimize the occurrence of extremely long reference designations, the repeating portion of a reference designation appears only once at the start of a sequence, and once thereafter at the start of each new page, as applicable.

8.3.2 Indenture Letters

Column two of the parts list shows the top–down breakdown by means of indenture letters. That is, the letter A indicates the highest level of assembly, the letter B indicates a first level subordinate assembly, the letter C indicates an assembly subordinate to a second level assembly, and so on.

8.3.3 Name/Description

Column three of the parts list contains the name and description of each part. If an identical part has already been listed at an earlier point within the same indenture, a “same as” reference is given, and columns four, five, and six are left blank.

8.3.4 Manufacturer’s Code

Column four of the parts list lists a 5–digit manufacturer’s code taken from Federal Cataloging Handbook H4-1. Table 8-1 (refer to paragraph 8.5) translates the code.

PARTS LIST (Continued)

REF DES	I N	NAME OF PART/DESCRIPTION	MFR CODE NO.	JAN/MIL MFR. PART. NO	NOTES
22A3					
A3	C	BOARD ASSEMBLY, GENERAL INTERFACE	97942	1D18968G01	
A5	C	BOARD ASSEMBLY, SBC PROCESSOR (NOTE — SERIAL NOS 1048-1127 AND 2063-2068 HAVE 2 JUMPER WIRES AS FOLLOWS: FROM P1-B63 TO Z65-01; FROM P1-B68 TO Z65-06)	97942	1D21053G01	
A6	C	BOARD ASSEMBLY, ASIS		ASR9-002.6	
A8	C	BOARD ASSEMBLY, PROGRAMMABLE INTERFACE	97942	1D18966G01	
A9	C	SAME AS 22A3A8			
A12	C	BOARD ASSEMBLY, SCIP/SRAP INTERFACE	97942	1D18974G01	
A14	C	SAME AS 22A3A12			
A17	C	SAME AS 22A3A8			
A18	C	BOARD ASSEMBLY, SBC DATA MEMORY	97942	1D21312G01	
A23	C	SAME AS 22A3A5			
A24	C	BOARD ASSEMBLY, VIDEO OUTPUT	97942	1D18970G01	
A26	C	BOARD ASSEMBLY, WEATHER OUTPUT	97942	1D18972G01	
A28	C	BOARD ASSEMBLY, DISTRIBUTION CONTROL	97942	1D18976G01	
A29	C	SAME AS 22A3A28			
A30	C	SAME AS 22A3A28			
A31	C	SAME AS 22A3A28			
A32	C	SAME AS 22A3A28			
A33	C	SAME AS 22A3A28			
A34	C	SAME AS 22A3A28			
A35	C	SAME AS 22A3A28			
A38	C	BOARD ASSEMBLY, SYSTEM CONTROL INTERFACE NO.1	97942	1D18978G01	
A40	C	SAME AS 22A3A5			
A42	C	SAME AS 22A3A18			
A44	C	BOARD ASSEMBLY, PANEL INTERFACE	97942	1D18982G01	
A46	C	BOARD ASSEMBLY, RS449 INTERFACE GENERATOR	97942	1D21477G01	
A48	C	SAME AS 22A3A8			
B1	C	FAN, TUBEAXIAL, INPUT POWER 115 VAC @ 50/60 HZ, MAX LINE CURRENT 0.22 AMP, MAX LOCKED ROTOR CURRENT 0.300 AMP, MAX DELIVERY 119 CFM, MAX SPEED 3200 RPM	97942	646A048H01	
B2	C	SAME AS 22A3B1			
B3	C	SAME AS 22A3B1			

PARTS LIST (Continued)

REF DES	I N	NAME OF PART/DESCRIPTION	MFR CODE NO.	JAN/MIL MFR. PART. NO	NOTES
22A3					
B4	C	SAME AS 22A3B1			
B5	C	SAME AS 22A3B1			
B6	C	SAME AS 22A3B1			
N1	C	MATRIX PLATE, WIRED	97942	1D20863G01	
22A3N1					
J1	D	CONNECTOR, HEADER, CONTACT-LESS 3.260 IN. W, 0.689	97942	645A712H01	
J2	D	SAME AS 22A3N1J1			
J3	D	SAME AS 22A3N1J1			
J4	D	SAME AS 22A3N1J1			
J5	D	SAME AS 22A3N1J1			
J6	D	SAME AS 22A3N1J1			
J7	D	SAME AS 22A3N1J1			
J8	D	SAME AS 22A3N1J1			
J9	D	SAME AS 22A3N1J1			
J10	D	SAME AS 22A3N1J1			
J11	D	SAME AS 22A3N1J1			
J12	D	SAME AS 22A3N1J1			
J13	D	SAME AS 22A3N1J1			
J14	D	SAME AS 22A3N1J1			
J15	D	SAME AS 22A3N1J1			
J16	D	SAME AS 22A3N1J1			
J17	D	SAME AS 22A3N1J1			
J18	D	SAME AS 22A3N1J1			
J22	D	SAME AS 22A3N1J1			
J23	D	SAME AS 22A3N1J1			
J26	D	SAME AS 22A3N1J1			
J28	D	SAME AS 22A3N1J1			
J29	D	SAME AS 22A3N1J1			
J31	D	SAME AS 22A3N1J1			
J32	D	SAME AS 22A3N1J1			
J33	D	SAME AS 22A3N1J1			

PARTS LIST (Continued)

REF DES	I N	NAME OF PART/DESCRIPTION	MFR CODE NO.	JAN/MIL MFR. PART. NO	NOTES
22A3N1					
J36	D	SAME AS 22A3N1J1			
J38	D	SAME AS 22A3N1J1			
J40	D	SAME AS 22A3N1J1			
J42	D	SAME AS 22A3N1J1			
J44	D	SAME AS 22A3N1J1			
J46	D	SAME AS 22A3N1J1			
J48	D	SAME AS 22A3N1J1			
J49	D	CONNECTOR, HEADER, CONTACT-LESS	97942	645A710H05	
J50	D	SAME AS 22A3N1J49			
J51	D	SAME AS 22A3N1J49			
J52	D	SAME AS 22A3N1J49			
J53	D	SAME AS 22A3N1J49			
J54	D	SAME AS 22A3N1J49			
J55	D	SAME AS 22A3N1J49			
J56	D	SAME AS 22A3N1J49			
W1	D	BUS, CONNECTOR, TERMINAL TYPE 5.80 IN. L, 0.23 IN. H	97942	646A023H03	
W2	D	SAME AS 22A3N1W1			
W3	D	SAME AS 22A3N1W1			
22A3					
ZZ1	C	CORDSET, ELECTRICAL, 11.25 IN. L	97942	646A047H02	
ZZ2	C	SAME AS 22A3ZZ1			
ZZ3	C	SAME AS 22A3ZZ1			
ZZ4	C	SAME AS 22A3ZZ1			
ZZ5	C	SAME AS 22A3ZZ1			
ZZ6	C	CORDSET, ELECTRICAL, 36.0 IN. L	97942	646A047H01	
22					
A4	B	PROCESSOR B	97942	1D20491G01	
22A4					
A3	C	BOARD ASSEMBLY, GENERAL INTERFACE	97942	1D18968G01	

PARTS LIST (Continued)

REF DES	I N	NAME OF PART/DESCRIPTION	MFR CODE NO.	JAN/MIL MFR. PART. NO	NOTES
22A4					
A5	C	BOARD ASSEMBLY, SBC PROCESSOR (NOTE — SERIAL NOS 1048-1127 AND 2063-2068 HAVE 2 JUMPER WIRES AS FOLLOWS: FROM P1-B63 TO Z65-01; FROM P1-B68 TO Z65-06)	97942	1D21053G01	
A6	C	SAME AS 22A3A6			
A8	C	BOARD ASSEMBLY, PROGRAMMABLE INTERFACE	97942	1D18966G01	
A9	C	SAME AS 22A4A8			
A12	C	BOARD ASSEMBLY, SCIP/SRAP INTERFACE	97942	1D18974G01	
A14	C	SAME AS 22A4A12			
A17	C	SAME AS 22A4A8			
A18	C	BOARD ASSEMBLY, SBC DATA MEMORY	97942	1D21312G01	
A23	C	SAME AS 22A4A5			
A24	C	BOARD ASSEMBLY, VIDEO OUTPUT	97942	1D18970G01	
A26	C	BOARD ASSEMBLY, WEATHER OUTPUT	97942	1D18972G01	
N1	C	MATRIX PLATE, WIRED	97942	1D20864G01	
22A4N1					
J1	D	CONNECTOR, HEADER, CONTACT-LESS 3.260 IN. W, 0.689	97942	645A712H01	
J2	D	SAME AS 22A4N1J1			
J6	D	SAME AS 22A4N1J1			
J7	D	SAME AS 22A4N1J1			
J8	D	SAME AS 22A4N1J1			
J9	D	SAME AS 22A4N1J1			
J12	D	SAME AS 22A4N1J1			
J14	D	SAME AS 22A4N1J1			
J15	D	SAME AS 22A4N1J1			
J16	D	SAME AS 22A4N1J1			
J17	D	SAME AS 22A4N1J1			
J18	D	SAME AS 22A4N1J1			
J22	D	SAME AS 22A4N1J1			
J23	D	SAME AS 22A4N1J1			
J28	D	SAME AS 22A4N1J1			
J29	D	SAME AS 22A4N1J1			

PARTS LIST (Continued)

REF DES	I N	NAME OF PART/DESCRIPTION	MFR CODE NO.	JAN/MIL MFR. PART. NO	NOTES
24					
	A	DUAL REMOTE SCIP	97942	1D23282G01	
24					
A1	B	SCIP CONTROL PANEL (SAME AS 22A1)	97942	1D20345G01	
A3	B	PROCESSOR A	97942	1D23451G01	
24A3					
A3	C	BOARD ASSEMBLY, GENERAL INTERFACE	97942	1D18968G01	
A5	C	BOARD ASSEMBLY, SBC PROCESSOR (NOTE — SERIAL NOS 1048-1127 AND 2063-2068 HAVE 2 JUMPER WIRES AS FOLLOWS: FROM P1-B63 TO Z65-01; FROM P1-B68 TO Z65-06)	97942	1D21053G01	
A6	C	BOARD ASSEMBLY, ASIS		ASR9-002.6	
A8	C	BOARD ASSEMBLY, PROGRAMMABLE INTERFACE	97942	1D18966G01	
A9	C	SAME AS 24A3A8			
A12	C	BOARD ASSEMBLY, SCIP/SRAP INTERFACE	97942	1D18974G01	
A14	C	SAME AS 24A3A12			
A17	C	SAME AS 24A3A8			
A18	C	BOARD ASSEMBLY, SBC DATA MEMORY	97942	1D21312G01	
A23	C	SAME AS 24A3A5			
A24	C	BOARD ASSEMBLY, VIDEO OUTPUT	97942	1D18970G01	
A26	C	BOARD ASSEMBLY, WEATHER OUTPUT	97942	1D18972G01	
A28	C	BOARD ASSEMBLY, DISTRIBUTION CONTROL	97942	1D18976G01	
A29	C	SAME AS 24A3A28			
A30	C	SAME AS 24A3A28			
A31	C	SAME AS 24A3A28			
A32	C	SAME AS 24A3A28			
A33	C	SAME AS 24A3A28			
A34	C	SAME AS 24A3A28			
A35	C	SAME AS 24A3A28			
A46	C	BOARD ASSEMBLY, RS449 INTERFACE GENERATOR	97942	1D21477G01	
B1	C	FAN, TUBEAXIAL, INPUT POWER 115 VAC @ 50/60 HZ, MAX LINE CURRENT 0.22 AMP, MAX LOCKED ROTOR CURRENT 0.300 AMP, MAX DELIVERY 119 CFM, MAX SPEED 3200 RPM	97942	646A048H01	

PARTS LIST					
REF DES	I N	NAME OF PART/DESCRIPTION	MFR CODE NO.	JAN/MIL MFR. PART. NO	NOTES
24A3					
B2	C	SAME AS 24A3B1			
B3	C	SAME AS 24A3B1			
B4	C	SAME AS 24A3B1			
B5	C	SAME AS 24A3B1			
B6	C	SAME AS 24A3B1			
N1	C	MATRIX PLATE, WIRED	97942	1D20863G01	
24A3N1					
J1	D	CONNECTOR, HEADER, CONTACT-LESS 3.260 IN. W, 0.689	97942	645A712H01	
J2	D	SAME AS 24A3N1J1			
J3	D	SAME AS 24A3N1J1			
J4	D	SAME AS 24A3N1J1			
J5	D	SAME AS 24A3N1J1			
J6	D	SAME AS 24A3N1J1			
J7	D	SAME AS 24A3N1J1			
J8	D	SAME AS 24A3N1J1			
J9	D	SAME AS 24A3N1J1			
J10	D	SAME AS 24A3N1J1			
J11	D	SAME AS 24A3N1J1			
J12	D	SAME AS 24A3N1J1			
J13	D	SAME AS 24A3N1J1			
J14	D	SAME AS 24A3N1J1			
J15	D	SAME AS 24A3N1J1			
J16	D	SAME AS 24A3N1J1			
J17	D	SAME AS 24A3N1J1			
J18	D	SAME AS 24A3N1J1			
J22	D	SAME AS 24A3N1J1			
J23	D	SAME AS 24A3N1J1			
J26	D	SAME AS 24A3N1J1			
J28	D	SAME AS 24A3N1J1			
J29	D	SAME AS 24A3N1J1			
J31	D	SAME AS 24A3N1J1			

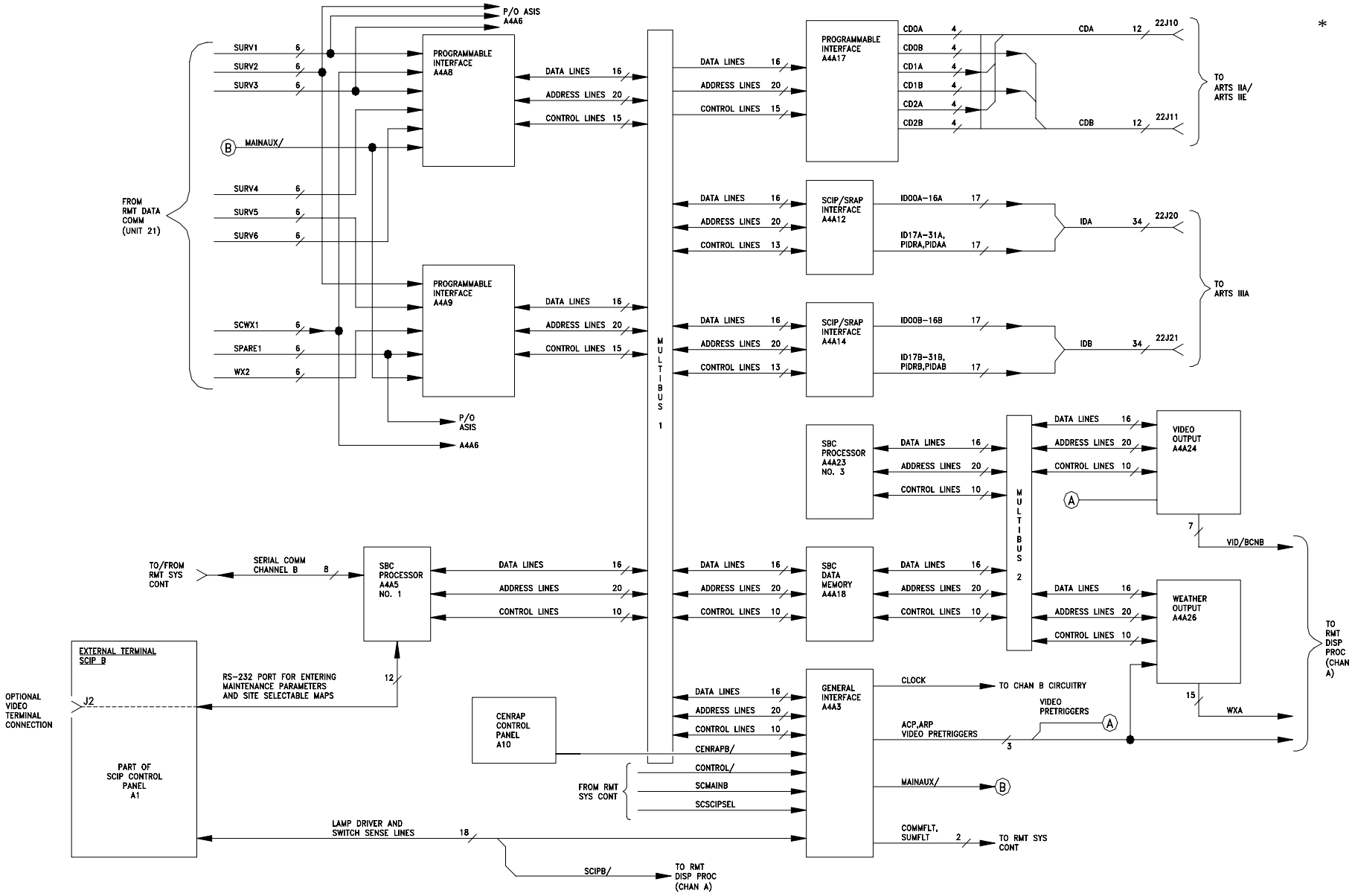


FIGURE 11-5. REMOTE DISPLAY PROCESSOR (CHANNEL B) HARDWARE BLOCK DIAGRAM

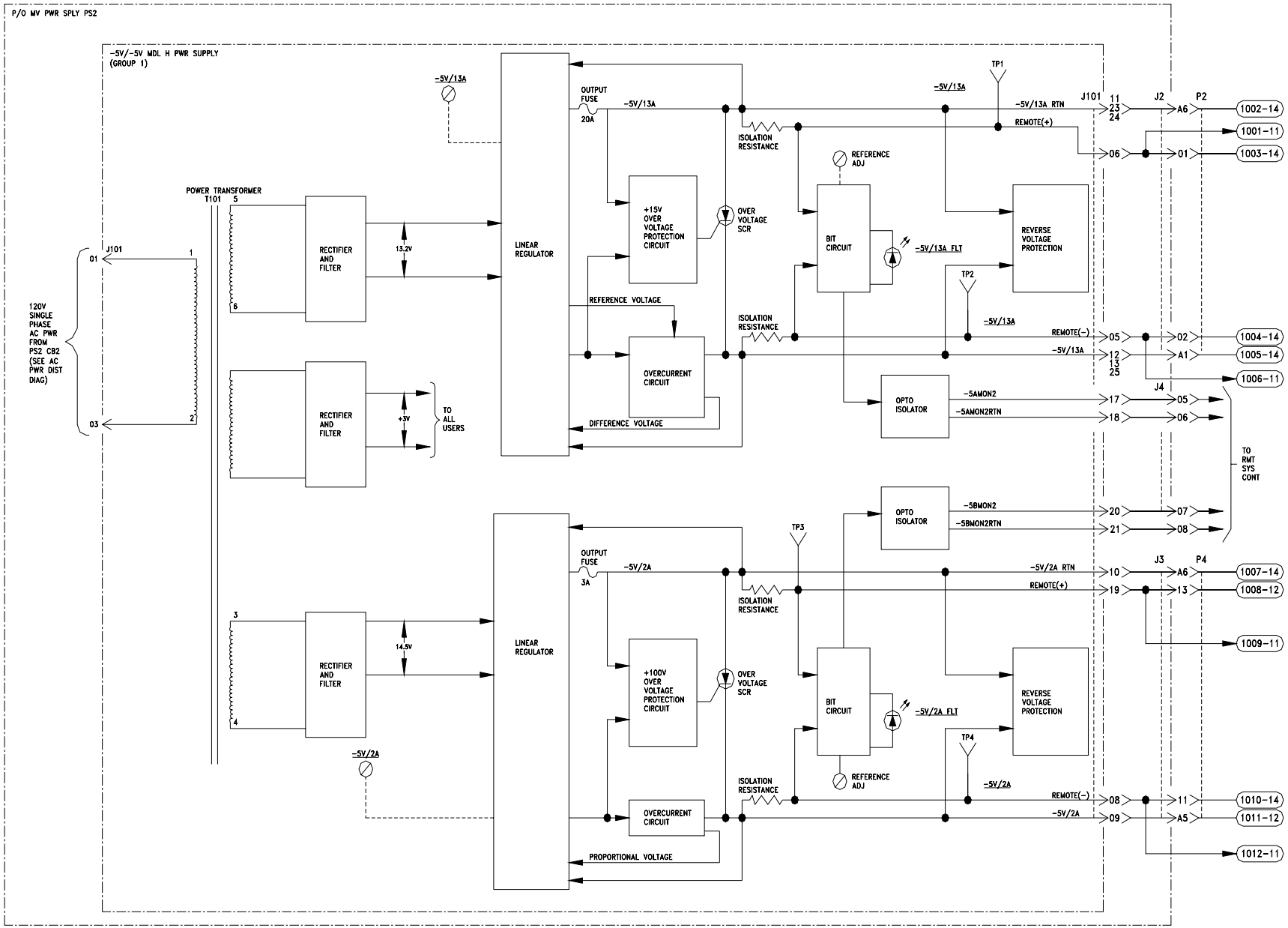


FIGURE 11-11. REMOTE SCIP DC POWER DISTRIBUTION SIGNAL FLOW DIAGRAM (SHEET 10)

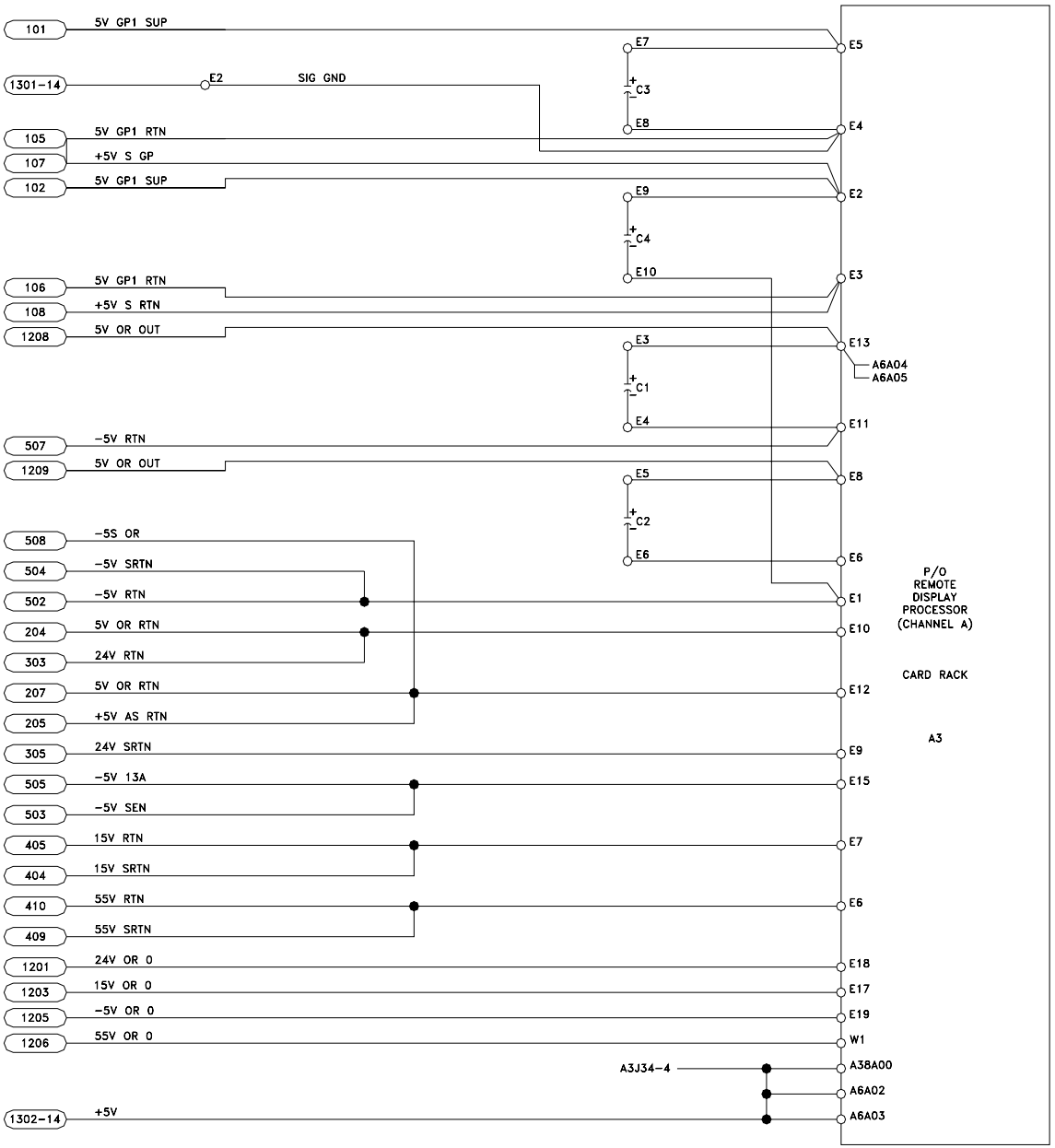


FIGURE 11-11. REMOTE SCIP DC POWER DISTRIBUTION SIGNAL FLOW DIAGRAM (SHEET 13)

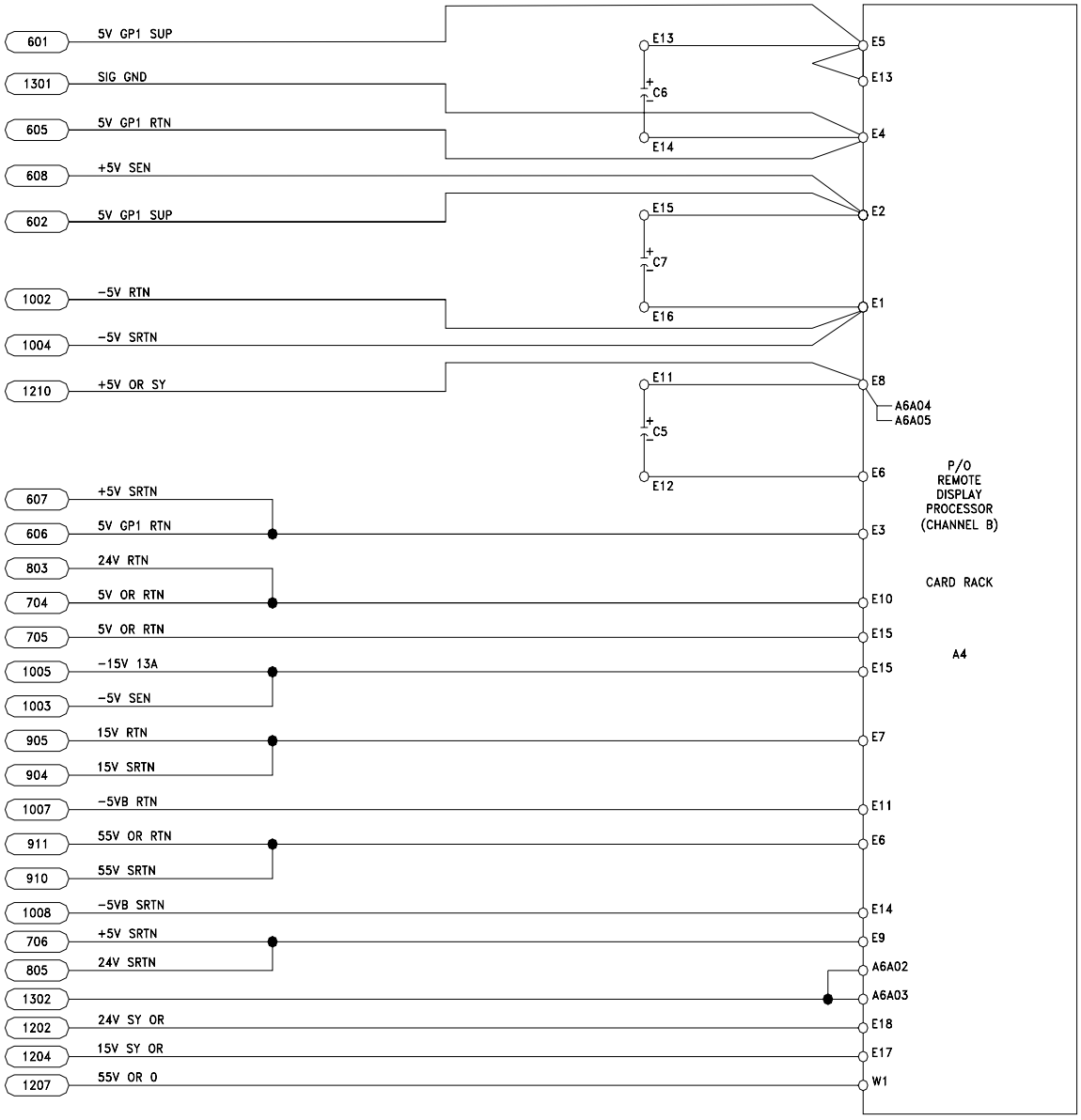


FIGURE 11-11. REMOTE SCIP DC POWER DISTRIBUTION SIGNAL FLOW DIAGRAM (SHEET 14-END)

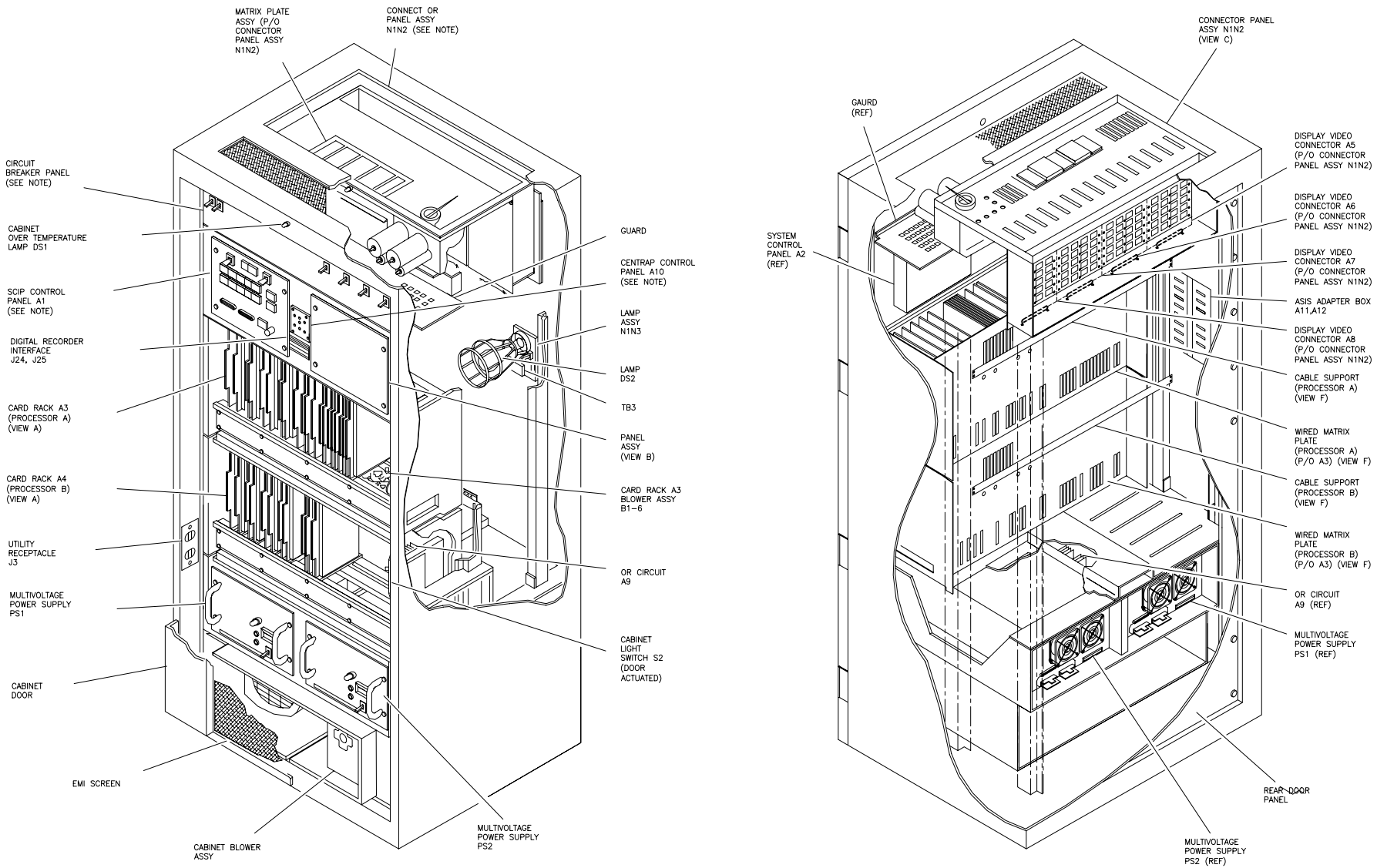
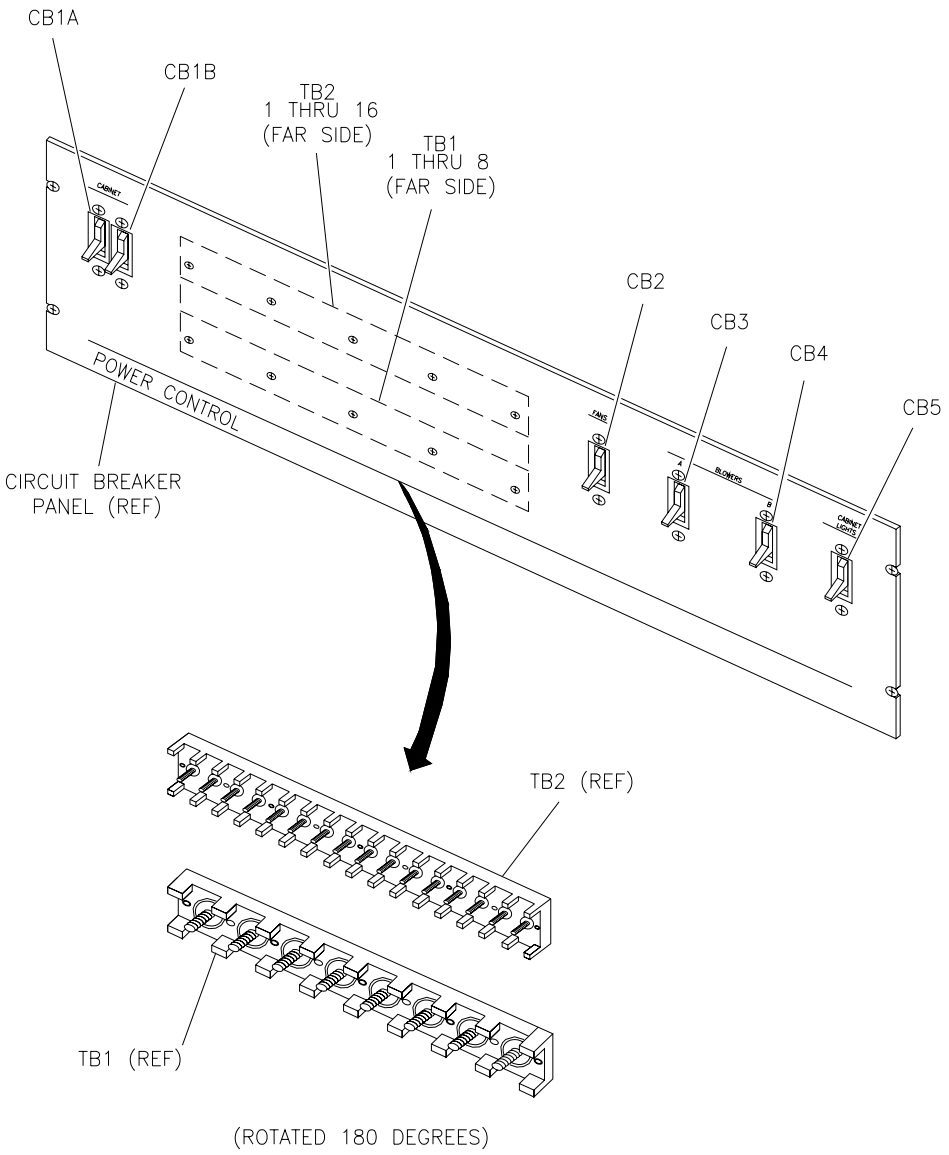
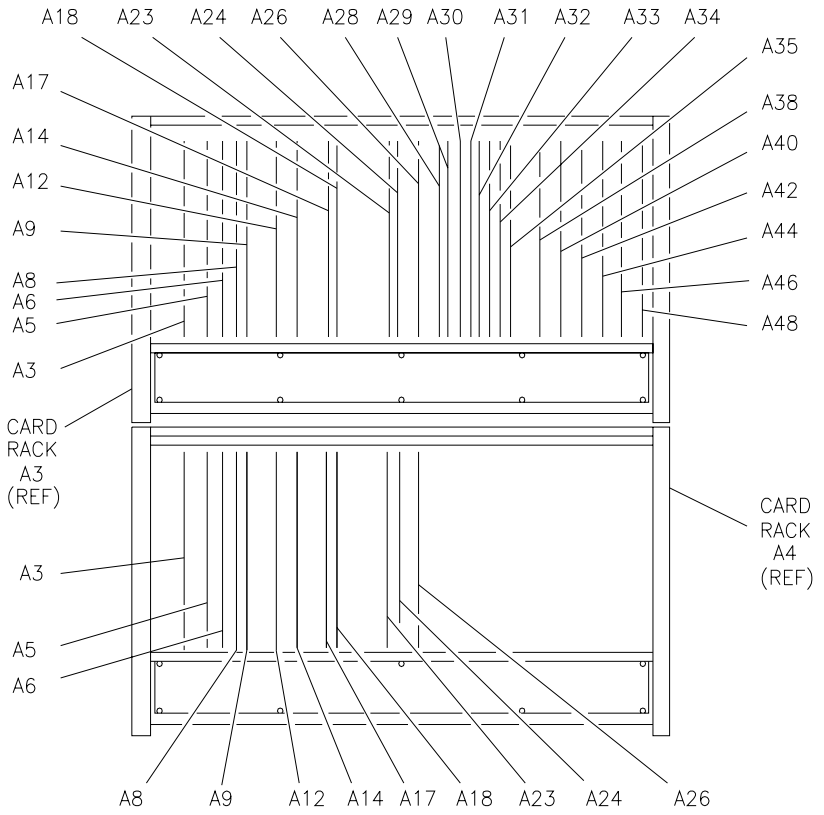


FIGURE 11-13. REMOTE SCIP (UNIT 22) MAJOR COMPONENTS (SHEET 1)

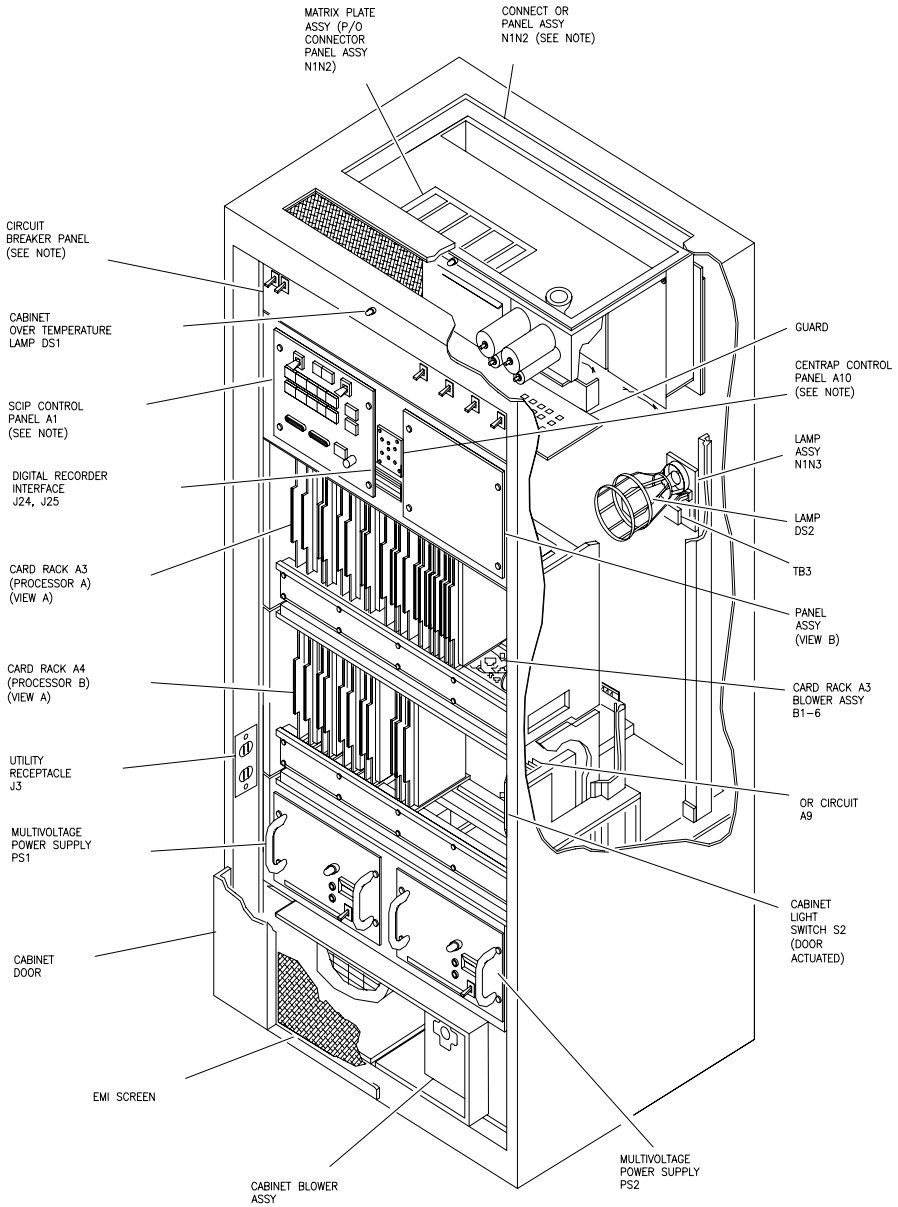


VIEW A

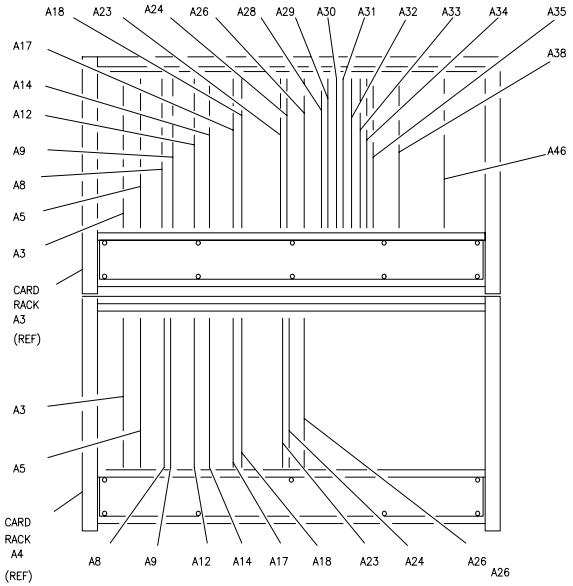


VIEW B

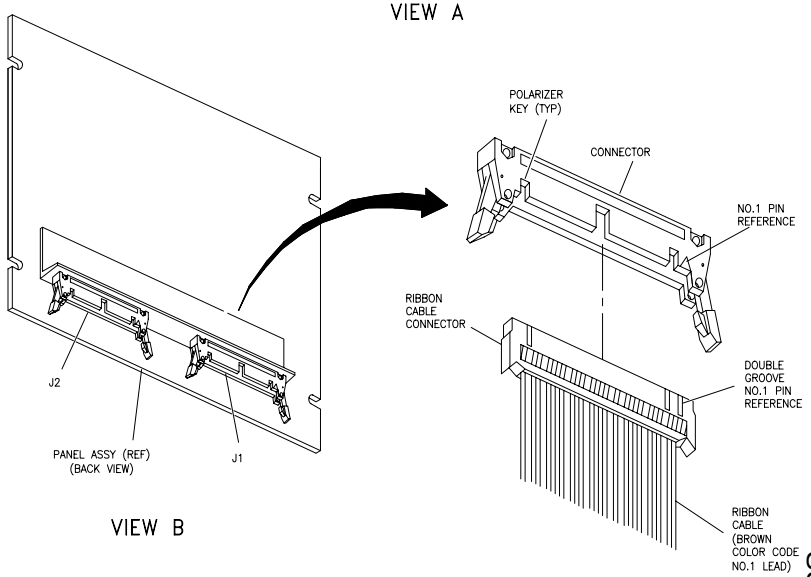
FIGURE 11-13. REMOTE SCIP (UNIT 22) MAJOR COMPONENTS (SHEET 5- END)



FRONT VIEW



VIEW A



VIEW B

NOTE:

REFER TO REMOTE SCIP (UNIT 22) MAJOR COMPONENTS ILLIATRATION FOR BACK OF CABINET AND FOR DETAILED VIEWS WHERE INDICATED.

FIGURE 11-14. DUAL REMOTE SCIP (UNIT 24) MAJOR COMPONENTS

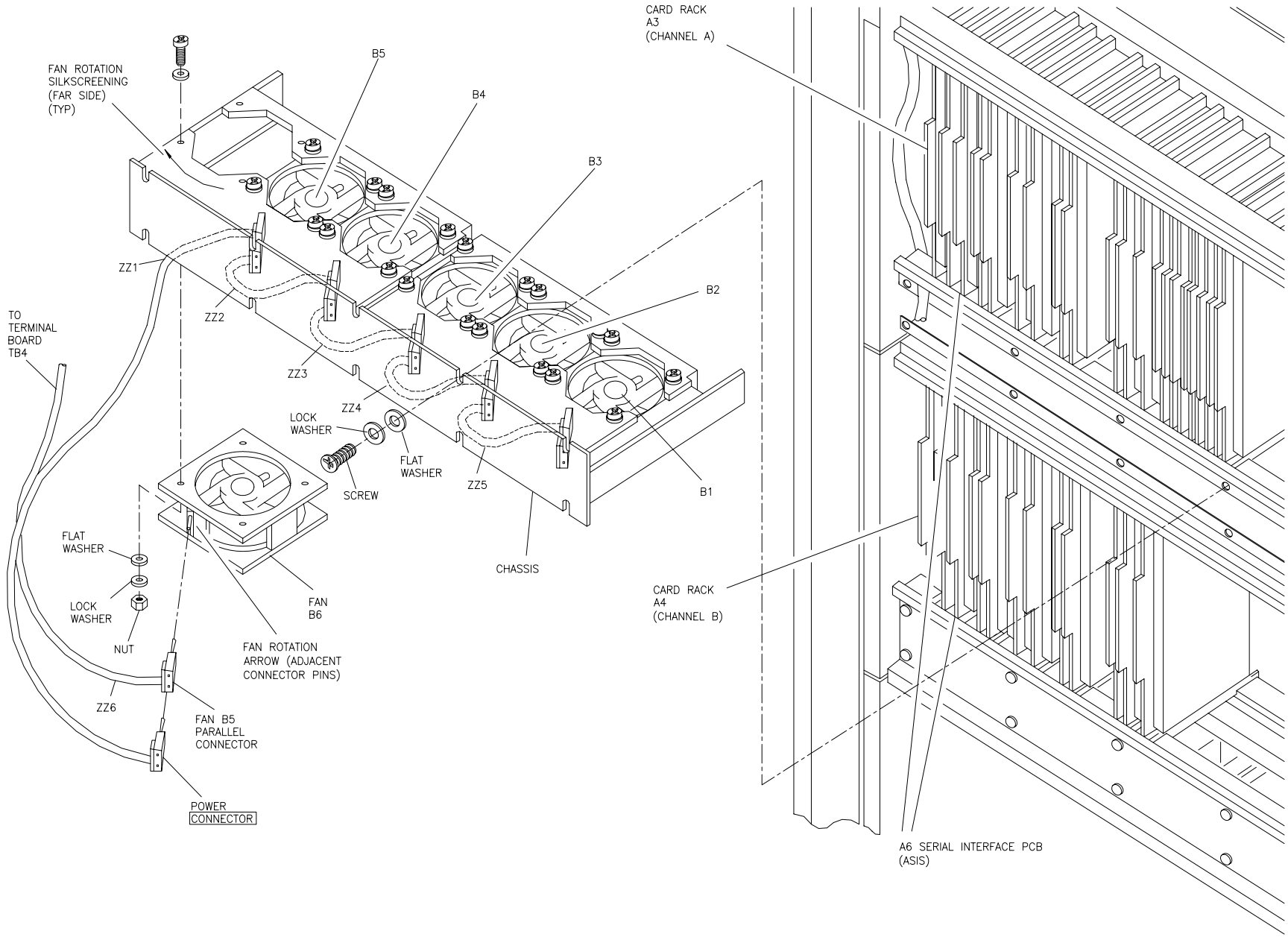


FIGURE 11–15. REMOVAL AND INSTALLATION OF CARD RACK A3 BLOWERS ASSEMBLY

11.0 TROUBLESHOOTING SUPPORT DATA

11.1 INTRODUCTION

This section contains a variety of illustrations that are useful in understanding equipment operation and analyzing and repairing equipment faults. The different types of illustrations are described in the following paragraphs.

11.2 OVERVIEW DIAGRAMS

Figure 11-1 (ASIS- Phase 2 Overview block diagram) depicts points of interfaces relating to the ASR-9 system.

11.3 SIMPLIFIED DIAGRAM

Figure 11-2 (ASIS- Phase 2 Signal Flow Diagram) serves as a reference for the technical description in Section 2. The signal flow diagrams also can be used in field-level troubleshooting.

11.4 SCHEMATIC DIAGRAM

Figure 11-3 (ASIS-Phase 2 Schematic Diagram) serves as a reference for component level signal flow and troubleshooting.

11.5 NETLIST SHEET NUMBERS

Table 11-1 (ASIS-Phase 2 Schematic Diagram Netlist Sheet Numbers) serves as a reference for finding signal names on the schematics in Figure 11-3.

*

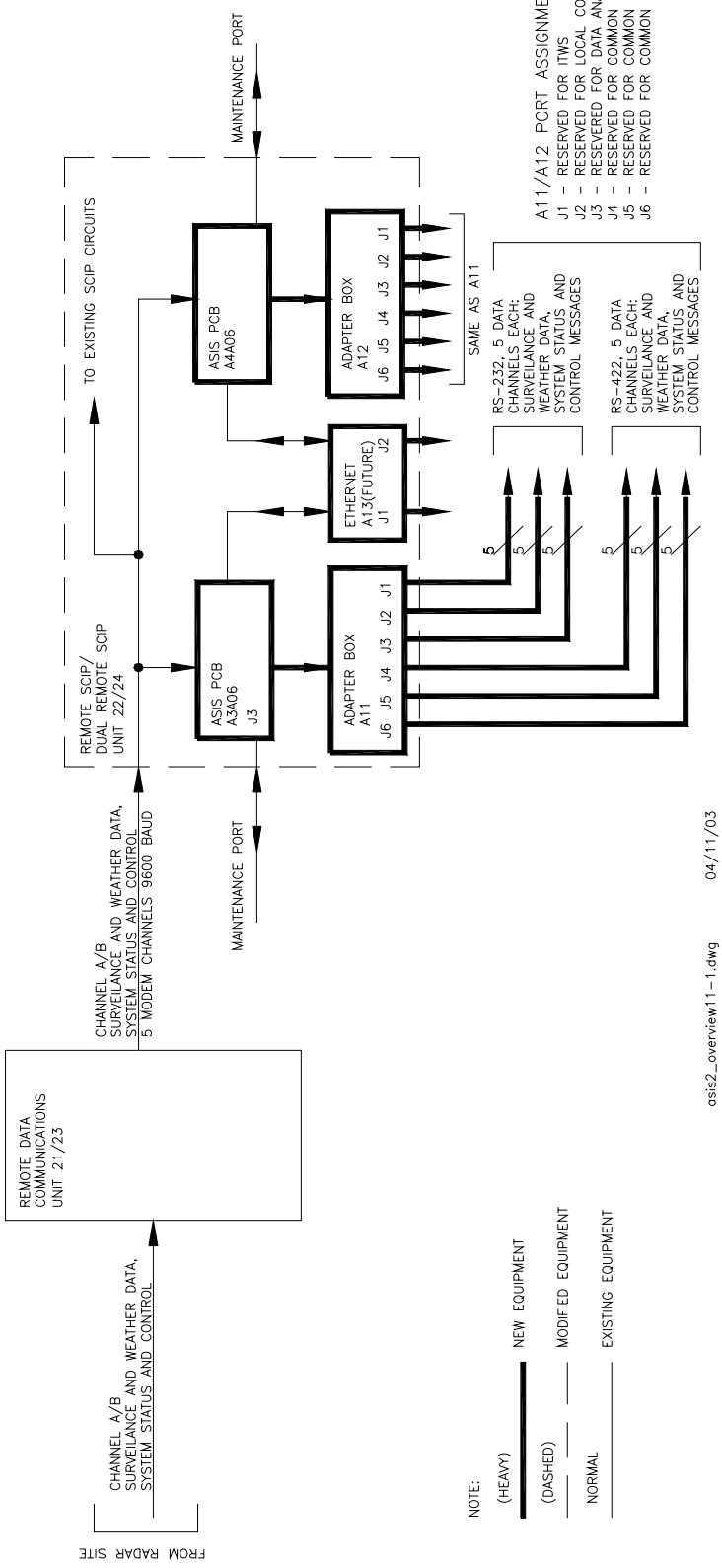


FIGURE 11-1. ASIS II OVERVIEW

*

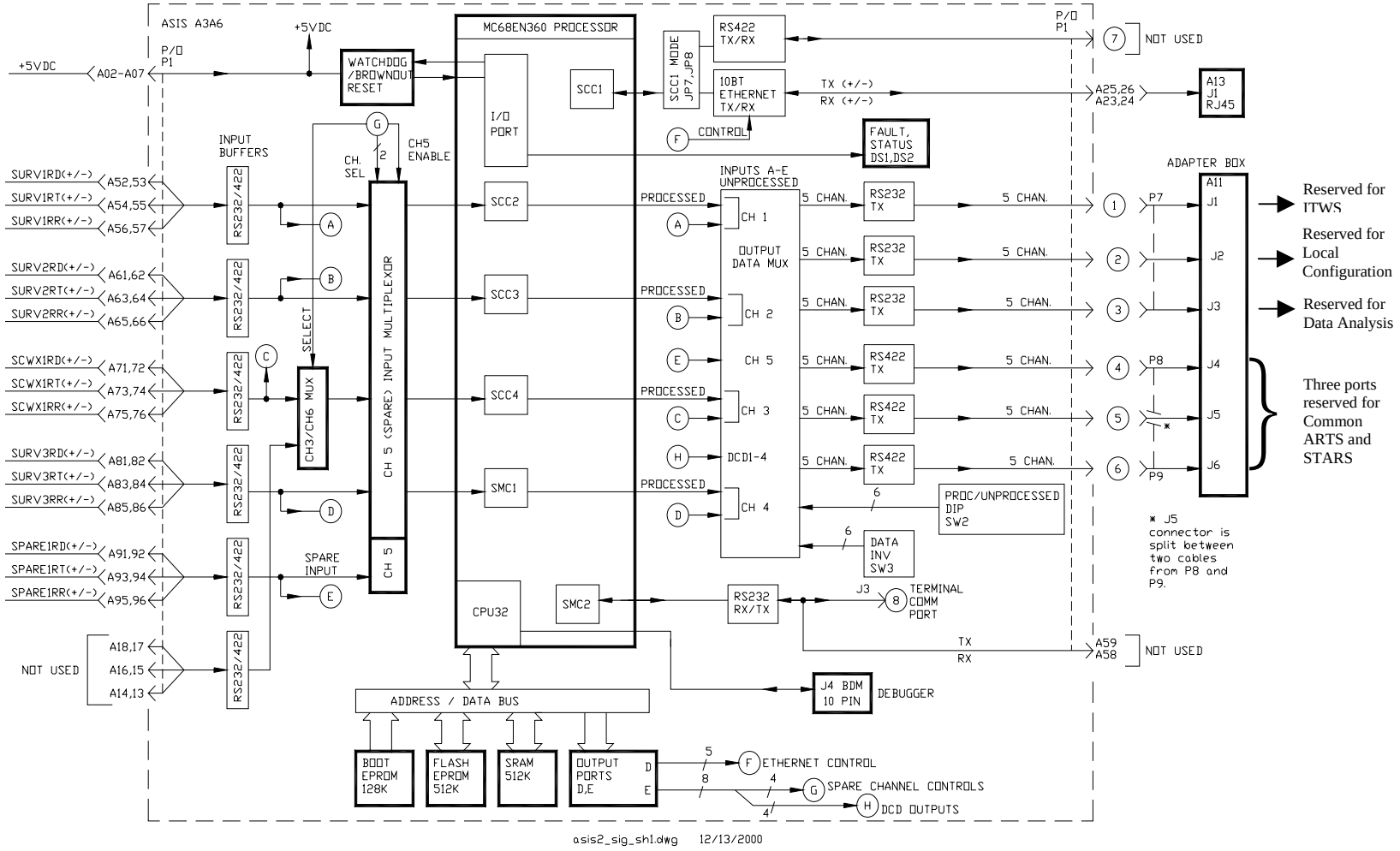


FIGURE 11-2. ASIS PHASE II SIGNAL FLOW DIAGRAM (SHEET 1 OF 5)

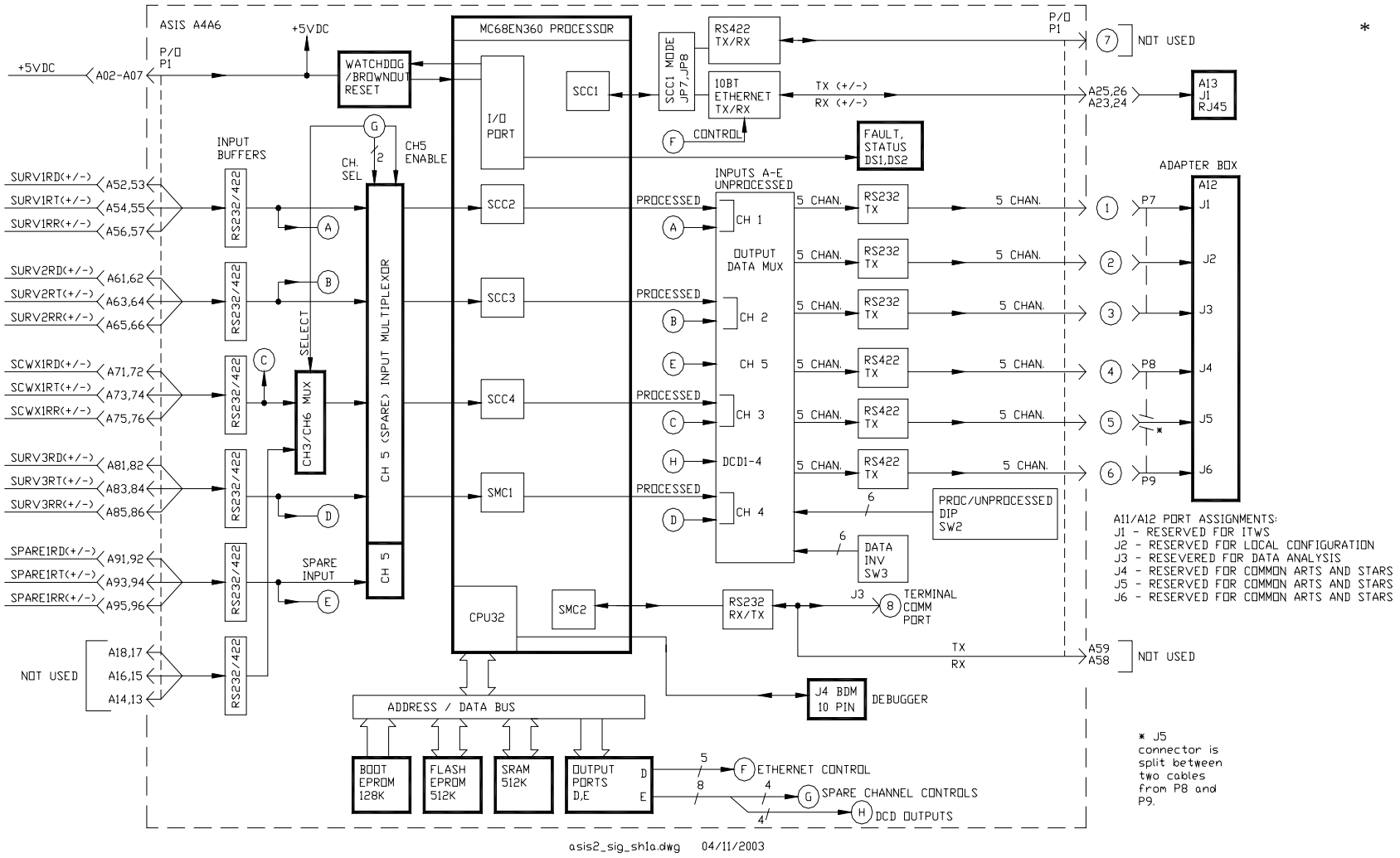


FIGURE 11-2. ASIS PHASE II SIGNAL FLOW DIAGRAM (SHEET 2 OF 5)

NOTES:

①

SIGNAL	PIN	J1	P7
DATA1	C91	1	33
CLK1	B91	14	34
DATA2	C92	2	35
CLK2	B92	15	36
DATA3	C93	3	37
CLK3	B93	16	38
DATA4	C94	4	39
CLK4	B94	17	40
DATA5	C95	5	41
CLK5	B95	18	42
DCD1	C96	6	43
DCD2	B96	19	44
DCD3	C97	7	45
DCD4	B97	20	46
DCD5	C98	8	47
GND	B98	21	48
+5V	C99	9	49
+5V	B99	22	50

②

SIGNAL	PIN	J2	P7
DATA1	C83	1	17
CLK1	B83	14	18
DATA2	C84	2	19
CLK2	B84	15	20
DATA3	C85	3	21
CLK3	B85	16	22
DATA4	C86	4	23
CLK4	B86	17	24
DATA5	C87	5	25
CLK5	B87	18	26
DCD1	C88	6	27
DCD2	B88	19	28
DCD3	C89	7	29
DCD4	B89	20	30
DCD5	C90	8	31
GND	B90	21	32

③

SIGNAL	PIN	J3	P7
DATA1	C75	1	1
CLK1	B75	14	2
DATA2	C76	2	3
CLK2	B76	15	4
DATA3	C77	3	5
CLK3	B77	16	6
DATA4	C78	4	7
CLK4	B78	17	8
DATA5	C79	5	9
CLK5	B79	18	10
DCD1	C80	6	11
DCD2	B80	19	12
DCD3	C81	7	13
DCD4	B81	20	14
DCD5	C82	8	15
GND	B82	21	16

④

SIGNAL	PIN	J4	P8
DATA1-	C58	1	15
DATA1+	B58	20	16
CLK1-	C59	2	17
CLK1+	B59	21	18
DCD1-	C60	3	19
DCD1+	B60	22	20
DATA2-	C61	4	21
DATA2+	B61	23	22
CLK2-	C62	5	23
CLK2+	B62	24	24
DCD2-	C63	6	25
DCD2+	B63	25	26
DATA3-	C64	7	27
DATA3+	B64	26	28
CLK3-	C65	8	29
CLK3+	B65	27	30
DCD3-	C66	9	31
DCD3+	B66	28	32
DATA4-	C67	10	33
DATA4+	B67	29	34
CLK4-	C68	11	35
CLK4+	B68	30	36
DCD4-	C69	12	37
DCD4+	B69	31	38
DATA5-	C70	13	39
DATA5+	B70	32	40
CLK5-	C71	14	41
CLK5+	B71	33	42
DCD5-	C72	15	43
DCD5+	B72	34	44
GND	C73	16	45
GND	B73	35	46

asis2_sig_sh2.dwg 1/27/2000

Figure 11-2. ASIS-Phase 2 Signal Flow Diagram (Sheet 3 of 5)

NOTES:

(5)

SIGNAL	PIN	J5	P9
DATA1-	C17	1	33
DATA1+	B17	20	34
CLK1-	C18	2	35
CLK1+	B18	21	36
DCD1-	C19	3	37
DCD1+	B19	22	38
DATA2-	C20	4	39
DATA2+	B20	23	40
CLK2-	C21	5	41
CLK2+	B21	24	42
DCD2-	C22	6	43
DCD2+	B22	25	44
DATA3-	C23	7	45
DATA3+	B23	26	46
CLK3-	C24	8	47
CLK3+	B24	27	48
DCD3-	C25	9	49
DCD3+	B25	28	50
DATA4-	C51	10	1
DATA4+	B51	29	2
CLK4-	C52	11	3
CLK4+	B52	30	4
DCD4-	C53	12	5
DCD4+	B53	31	6
DATA5-	C54	13	7
DATA5+	B54	32	8
CLK5-	C55	14	9
CLK5+	B55	33	10
DCD5-	C56	15	11
DCD5+	B56	34	12
GND	C57	16	13
GND	B57	35	14

* P8

(6)

SIGNAL	PIN	J6	P9
DATA1-	C01	1	1
DATA1+	B01	20	2
CLK1-	C02	2	3
CLK1+	B02	21	4
DCD1-	C03	3	5
DCD1+	B03	22	6
DATA2-	C04	4	7
DATA2+	B04	23	8
CLK2-	C05	5	9
CLK2+	B05	24	10
DCD2-	C06	6	11
DCD2+	B06	25	12
DATA3-	C07	7	13
DATA3+	B07	26	14
CLK3-	C08	8	15
CLK3+	B08	27	16
DCD3-	C09	9	17
DCD3+	B09	28	18
DATA4-	C10	10	19
DATA4+	B10	29	20
CLK4-	C11	11	21
CLK4+	B11	30	22
DCD4-	C12	12	23
DCD4+	B12	31	24
DATA5-	C13	13	25
DATA5+	B13	32	26
CLK5-	C14	14	27
CLK5+	B14	33	28
DCD5-	C15	15	29
DCD5+	B15	34	30
GND	C16	16	31
GND	B16	35	32

asis2_sig_sh3.dwg 1/27/2000

Figure 11-2. ASIS-Phase 2 Signal Flow Diagram (Sheet 4 of 5)

NOTES:

(7)

SIGNAL	PIN	J11
AUX_TXD+	A78	3
AUX_TXD-	A79	2
AUX_TXC+	A87	4
AUX_TXC-	A88	23
AUX_DCD+	C26	14
AUX_DCD-	C27	20
AUX_RTS+	A89	7
AUX_RTS-	A97	12
AUX_RXD+	A67	5
AUX_RXD-	A68	6
AUX_RXC+	A69	8
AUX_RXC-	A77	17
AUX_CTS+	B74	9
AUX_CTS-	C74	25
AUX_CD+	B26	15
AUX_CD-	B27	19

(8)

SIGNAL	PIN	J3	RS-232 (DB-9)
DCD		1	1
DSR		2	6
TX	A59	3	2
RTS		4	7
RX	A58	5	3
CTS		6	8
DTR		7	4
GND	A60	9	5

asis2_sig_sh4.dwg 3/7/2000

Figure 11-2. ASIS-Phase 2 Signal Flow Diagram (Sheet 5 of 5)

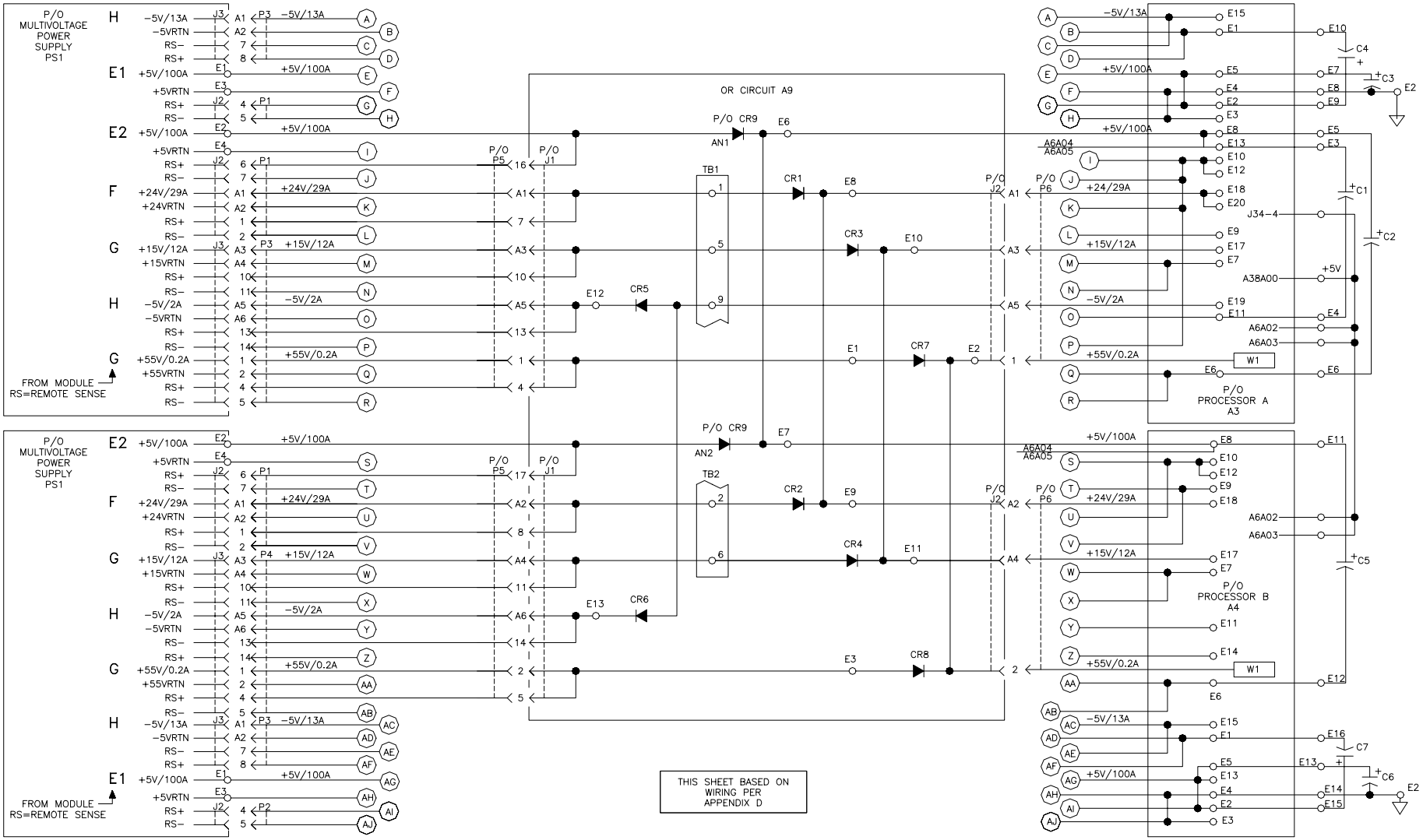


FIGURE 11-19. REMOTE SCIP (UNIT 22)/DUAL REMOTE SCIP (UNIT 24) SCHEMATIC/WIRING DIAGRAM (SHEET 2)